The Builder.

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"Going Along:" Turin and Italian Lakes.

SIGHT-SEEING is naturally the order of the day, and we rush off at once to the more prominent and best known Lions yet unvisited in Turin, nearly all of them, luckily, pretty close together. Pity the poor foreigner, in a parenthesis, who wishes to do the same thing in London in a short time,—who, putting up say at the Victoria Hotel, starts to get a peep at the Thames Tunnel and the South Kensington collections, and perhaps dip into the British Museum, northward, between the two. In Turin, however, things lie together. In the Royal Palace, there are some modern pictures, amongst which may be specially mentioned the Judgment of Solomon, by Podesti (very good, particularly the figure of the real mother); "Frederic Barbarossa at the Siege of Alexandria," by Arienti; and the charming portrait of the young Duchess of Burgundy in her red-velvet, gold-laced walking-dress, with powdered hair, and hat in her hand. There is a handsome suite of reception-rooms, elaborately gilt; and the throne-room has a fine parquetted floor. Many other points of interest present themselves in the Royal apartments here, which since the death of the Queen and the Queen-Mother have not been used,—the *Salle de Reception*, for example, where the Princess Clotilde was asked in marriage for the Prince Napoleon, and the Princess Pia for the King of Portugal; two excellent busts of these princesses, by Santovarini, of Genoa; the chandeliers of rock crystal, on frames of finely-worked steel; and the lift, or descending-room, constructed beyond the external wall, to lower the Queen-Mother from her apartments to the gardens, to spare her fatigue.

In the museum, connected with the palace, we find the very interesting and well-known collection of armour and arms, the *Armeria di Carlo Alberti*, including many fine equestrian suits admirably mounted on well-modelled horses covered with skins from the Royal stable. By a little confusion of recollections, easily understood, this peculiarity was attributed to the horses in the Ambras Museum, Vienna, in our description of that admirable collection. It belongs, however, exclusively to those in the Turin collection. There is one horse in especial, a cream, quite lifelike, and carrying a graceful rider,—the whole a perfect specimen of the manner in which equestrian suits should be displayed. We are again led to think with little satisfaction of our armoury in the Tower at home, which ought to be the finest collection of the kind in the world, and might be soon made so under proper direction. In the Turin collection there are two or three suits of the fifteenth century, more than usually well wrought and gilt; some excellent swords and breastplates; and the arms given to Philibert Emanuel by Charles V. of Spain, finely worked on ivory and in metal. One suit, noticeable for its very large size, is powdered with a coronet, the letter F, and the pentacle,

Amongst the curiosities and caprices is a winged Burgonet taking the shape of the winged head of an animal with fangs, and yet not unlike an ugly sort of flying fish. This is a recent addition from Germany, purchased by the present *Re Galantuomo*; and a genuine specimen, which is more than can be said of some winged burgonets we know of. The attendant insists on its belonging to the eighth or ninth century; but that is simply nonsense. It is probably not earlier than the time of Maximillian and our Henry VII. or VIII.

The Museum of Antiquities includes some remarkable Egyptian monuments and relics, and a tablet in honour of Champollion, who studied there.

The Royal Gallery of Painting gives us about 610 works, many of them excellent specimens. As a whole, the collection is much better than we had been led to expect, and in some points stands alone. Here, for example, may best be made a right estimate of the talent of Gaudenzio Ferrari, a painter who is much less esteemed in England than he should be. He was the pupil of Bernardino Luini, who had his inspiration, it will be remembered, from Da Vinci; and Gaudenzio, next to Luini, is the greatest of the Milanese masters. He had been a pupil of Perugino also, and at that time had made Raffaelle his friend, whom he helped about the year 1517 in painting some of the apartments in the Vatican. Gaudenzio died in 1549, and yet waits for a full appreciation.

Of the work of Paulo Veronese there are some excellent specimens, particularly "The Magdalen in the House of Simon the Pharisee," a grand picture in the most perfect state of preservation. The head of the Saviour is not the best part of the picture;—a circumstance not uncommon in similar subjects.

Rembrandt's "Portrait of a Rabbi" (that with lights on the table: there are two so entitled) is one of the finest of his works, and seizes the spectator by the eyelids: a very different affair from much of the rubbish in the world said to be by the Leyden master. Holbein's "Portrait of Calvin" is another speaking head. His portrait of Martin Luther, dated 1542, is a less agreeable picture; and, moreover, is not so well painted. The portrait of Pope Paul III., attributed to Titian, is a marvellously good head, with fine old hands. A "Portrait of a Man," grave and grand, under the same painter's name, admits of less doubt as to its authenticity. The gallery is strong in Guercinos (he lived from 1591 to 1666): especially beautiful is his "Virgin and Infant Jesus."

Many English visitors, when looking at two pictures hung together, and titled, "Portrait of a Man," and "Portrait of a Woman," both by Ravestein, portraits most delicately and carefully painted, have said,—and who is Ravestein? Jean Van Ravestein was born at the Hague about the year 1580, and lived until he was seventy-five. He was one of the best portrait-painters of the Dutch school, and that is saying something. There is a third picture by him in the Turin gallery, a "Portrait of a Princess," remarkably delicate. One of Memling's masterpieces is here, sometimes called "The Seven Griefs of Mary," but more properly in the catalogue, "The Passion of Jesus Christ." It is perhaps inferior to the "Seven Joys," at Munich, as we said when speaking of the latter, but is, nevertheless, a picture the sight of which is worth the journey from London. If that inducement, however, should not be sufficient, add to it the Vandyck portraits of the Princes of Savoy and of the children of Charles I., and all doubt will be removed.

There is a remarkable picture of "Cows in a Prairie," signed *Paulus Potter*, 1649; for which they say Charles-Albert refused a Raffaelle offered by the Grand Duke of Tuscany. The only picture in the collection seriously attributed to Raffaelle is one known as the *Madonna della Tenda*, from the character of the background. Some strong opinions have been given in favour of its authenticity, but it will never be received undoubtingly by all, though it be quite certain that Charles-Albert paid 3,000*l.* for it. The colour is brick-dusty, and portions of the picture, at any rate, are the work of a poor hand.

Pictures by Albert Durer, Rubens, Mantegna and others, come back to recollection, but we may not venture to dwell upon them; though we could willingly loiter in the rooms all day. High is the enjoyment, great the advantage to be found in a fine gallery of art. Art?—

> "Say what is Art? Th'acquirement of a sense
> Discoverable, dormant, incomplete—
> Poetry, Painting, Music; do they cheat
> The understanding with false ravishments
> Of things that are not? No: when man invents
> He but discovers; and with favour'd feet
> Walks privileged where angels pass and meet,
> And bringeth back, as 'twere, the rudiments
> Of their high language."

Leaving this mental trysting-place we go where *mortals* "pass and meet,"—to the Chamber of Deputies, the outside displaying a rough kind of cut brickwork, very curious to the sight; and afterwards to the Upper House. Off went our companion's hat, and justly, to the memory of one whose seat, not very long vacant, was pointed out. Camille de Cavour will long live in the hearts of his countrymen: his name will go down to posterity as that of a true patriot and a wise man. Nice and Savoy threw a stain upon his memory; but time, which gives more complete knowledge of events, is rapidly effacing it. A tablet distinguishes the house wherein he dwelt. If Cavour had lived, Italy by this day would have had less to strive for. The good time, however, is but delayed,—

> "Freedom's battle once begun,
> Bequeath'd from bleeding sire to son,
> Though baffled oft, is ever won."

The Chamber of Deputies, we may go back to say, is semicircular in plan, and has 500 seats for 444 members, who all speak, as in our own House of Commons, from their places, not from a tribune.

And now Turin, with its arcaded walks and back-ground of mountains (the Superga basilica on one of them four or five miles away); its university, its academy, its sprinkling of statues, the pleasant river, and active people, must be left. Our faces are set towards the Lago Maggiore, so we turn upon our footsteps; again use the railway back to Novara, and thence by another line go northwards, to Arona, at the foot of the lake. Let us first note, however, as to the river on which Turin stands, once called the Bodinco, or bottomless, and now the Po, what Eustace points out, that in its course, which, including its windings, extends to three hundred miles, it receives thirty rivers, bathes the walls of fifty towns and cities, and gives life, fertility, and opulence to extensive plains. Truly a good river.

The view of the Alps, on one side, going away from Turin, as many of our readers will recollect, is superb. The peaks, covered with snow, stand out in the pure air bright and clear, against a blue sky; while on the other side are seen the less rugged Apennines, covered with trees and herbage. It was an exquisite morning—everything smiled. Add to this a row on the lake in the evening, with a first view of Monte Rosa, Europe's second mountain, high upreared behind the nearer hills in a pale yellow sky, with, later in the night, the moon and a myriad of stars in the sky,—our one boat the only moving thing over the expanse of placid and illumined water,—and it becomes a day of sensations to be long remembered.

By sunlight the prominent object at this end of the lake is the colossal statue of the good Carlo Borromeo, built up of metal plates on a lofty stone pedestal, high on a mountain. A minute description of it was given in the *Builder* a few years ago. Suffice it now to say, to convey a notion of its size, that the head will hold

five persons, and that a man can walk upright within the outstretched arm. The stone-work of the pedestal is in a bad state, for want of pointing: and a house or two that have been recently built near it mix up awkwardly with the statue from several points of view, and spoil the effect of it. Some supervision by those in authority should be exercised in such respects.

The characteristics of the Lago Maggiore, its lofty banks covered with trees, detached residences, hamlets, and villages, embellished with flowers, and backed up by mighty mountains, with occasional intervals of cultivated plains, are too well known to make many words about them here excusable; and we must now go along even more rapidly than heretofore, simply indicating the continuity of our six weeks' route. The residence on the Isola Bella, the whole a glorious feature seen from a distance, and indeed offering much for near examination that is very curious and interesting, is occupied by the present Count Borromeo; the rooms, lined with pictures of not very high character, being well kept. Some mosaic beds, by the way, such as have been imitated in the new gardens of the Royal Horticultural Society at home, will be noticed in the grounds, with many things that are more pleasing. At one time Isola Bella was deemed an enchanted island, a paradise on earth. Then "taste" changed, and nothing good could be said of it. Both opinions must now be thought wrong. Few will visit, with moderate expectations, this remarkable example of what energy and money can accomplish with only a barren crag to work on, without full satisfaction and great pleasure. Lovers of nature will find even more to delight them on Isola Madre, close by, where the vegetation is of the richest character. The prickly pear, of an immense size, with leaves 18 and 20 inches long, enormous aloes, some in bloom, growing out of the rocky sides of the island; oranges, citrons, the bamboo, with its lovely light green spiky leaves, and a poplar "*Carolina*," with leaves of startling size at the top, are some of the features that first attract attention and excite wonder: while the more minute inquirer in such paths will perhaps note down the *Glioclea Dichinoides*, with oleander-like leaves and scarlet bloom; the *Datura Umilis*, for its pleasant scent; the *Plombago Zelenica*, with a small blue flower and honeysuckle leaves; or the *Arbutus Integrifolia*, looking, poor thing, as if flayed alive. The view of the lake from the summit-terrace of this remarkable place, this rock manured with gold, where many bits of the gardens are quite as startling as any of Beverley's fairy retreats in paint, is truly suberb; beautiful to sublimity.

The Lago d'Orta is about seven miles to the west of the Lago Maggiore, into which, indeed, it discharges its surplus waters, and is the object of a pleasant drive from Arona. It is small, about eight miles long, but very picturesque, and presents two or three points of great interest; as, for example, the pleasant villa and gardens of Count Natta, admirably laid out in winding paths, shaded by trees and fringed with ferns; the Sacro Monte, at the back of the town, with its remarkable groups of terra cotta figures; and the ancient church on the Isola san Giulio, in the lake. Taking the last first, a date as early as the fourth century is claimed for part of the church, and, without combating or inquiring into this, we are quite ready to consider the capitals of some of the attached and detached cylindrical columns in the nave aisles as belonging to a period anterior to the tenth century. These capitals are square blocks, the lower part sloped away on all sides to accord with the size of the column, and ornamented on the faces with incised lines, in the shape chiefly of simple volutes, and, on most of them, a star-form, not unlike the common star-fish. The pulpit, according to a remarkably intelligent and genial priest who accompanied us over the building, was set up in the year 900, under known direction. The sculptured ornaments of it include early leafage and a Sagittarius. Scattered about, the piers and walls display frescoes, some of them excellent, but all much decayed and destroyed. In the sacristy are a few paintings, some of them under good names. The island, as a whole, has evidently seen better days.

The groups on the Sacro Monte, the toilsome ascent to which is shortened and made agreeable by a road through the gardens of the villa we have named, are contained in some twenty buildings which we may call Stations, and represent events in the life of St. Francis of Assisi, to whom the church crowning the whole is dedicated. One of the groups represents St. Francis in Palestine freeing Christians; another a carnival at Assisi. The figures are life-size, brightly coloured after nature, energetic and expressive. Carlo Beretta, Bussola, and others, were the artists. The walls of the various buildings are decorated with paintings to correspond.* The whole is a strange puppet-show that fatigues before half is seen. As a relief, we ascend the unfinished Belvidere, and enjoy the splendid panorama there presented. The lake is divided into two; the mountains,—one at the end of the lake bears an old castle,—are sprinkled with villages, villas, and churches. The water is blue as a sapphire; the sky a paler tint without a speck; the near hills are covered with verdure: observe that one delicious bit where its bright green cuts against the intense blue of the lake. It is impossible to talk: it is as much as one can do to enjoy!

And now back to Arona: to-morrow we must re-cross the Alps, and say Farewell to Italy,—for a time.

ON GREEK ARCHITECTURE.†

FORTY years ago a lecture on Greek Architecture must have had a different scope from that which it has at present. For the cycle of architecture which the civilized nations have been running over during the last three hundred years has been this, that instead of developing from previous types as the Greeks did, and our European ancestors in the twelfth and thirteenth centuries, who attained a place in art more meritorious certainly than the Romans, whose architecture is little more than an echo of the Greek—fainter and more confused than the original,—we have been content to imitate old forms of art. This system of imitation, which now seems inveterate, was then running strongly in the Greek channel, and a lecturer must have had the knowledge that his hearers (could such a circle have then been gathered before him) were actually engaged in putting Greek dresses on their designs, no matter whether they would fit them or not, if only they would pass muster as Greek. It is now extremely improbable that any of us should be called upon to design anything in Greek; and we can afford to smile at the follies which have passed away from us. But are we not subject to a tyranny quite as illogical, tied and bound by similar bonds, but of another colour? We have changed our fashion, but not our way of life.

We are cured of the Greek mania, which almost exclusively occupied our architecture from 1770 to 1830, and with perhaps only one remarkable exception, are ashamed of its results. But are we to regret our admiration for the Periclean arts? Assuredly not. We shall sooner or later be disenchanted of our present thraldom, and be ashamed of most of the works of the present day. But should we do well, then, to regret our admiration of such buildings as Lincoln, Salisbury, and Westminster, Chartres, or Bourges? As little the one as the other. It is the habit of retrospection that is our bane, and we shall regret the use of forms and details which we choose, not because they are in themselves well adapted for our modern wants, but because they have been successful under other conditions. It is, perhaps, a necessary state of things, that as a reaction and co-existing with this servility to precedent, there is an extreme hankering after novelty, and it takes the form of rendering us sticklers for details, but careless of principles: could we reverse this order, we should, I believe, find what we desire.

It may be asked what use can we make of the older and recognized styles, if we are not called upon to reproduce their forms. Much every way. The spirit and principle cannot be too deeply studied. The Greek and Early Gothic are the two most remarkable of the bygone styles, and both were arrived at by a similar process. We have not so many links of the chain extant in the case of Greek architecture; but, as I shall hope to show, enough to satisfy us of the truth of the assertion, that the Greeks arrived at their architecture by adopting germs which they found among the older races from which they sprang. They did not transplant, but raised a new tree from seed, and went on adapting and refining for a long period. Our Mediæval ancestors did the same, and if I deprecate our now imitating their architecture, it is not from want of the most profound love and veneration for the works of the great period from 1100 to 1250. The practice of copying Greek architecture is passed away, and it is well. That of copying the Gothic will not be enduring, and the sooner it is passed away the better for true architecture. But there are deep principles involved in both styles which are essential to art in general, and it is for the evolution of these principles that Greek architecture claims so high a place in our regard.

The origin of Greek architecture is involved in mystery. I recommend to those who wish to pursue the subject further than is possible in a lecture, the careful study in Mr. Fergusson's "Principles of Beauty in Art," of the whole of the 110 pages which treat on the architecture and arts of Greece; but for the illustration of what I have claimed of the free spirit in which the Greeks derived their architecture from germs of pre-existing work, and so altered and naturalized it that they made it absolutely their own,—a few observations are necessary.

It is clear that Greece was peopled by two distinct races, at least as distinct as Celtic and Saxon among ourselves: namely, one race the semi-Asiatic Pelasgi, akin to the Ionians and Etruscans; and the other race, the Dorians. Of these two, the Pelasgi are first known to us as the dominant race; and to them belong the rude remains at Mycenæ, and similar works of fortification, and of an engineering character of a date probably not less than 1200 B.C. About the year 1100 B.C., the Dorians, who had repeatedly struggled with the Pelasgi, obtained the ascendant. This event is a turning point in Greek history, and is called the return of the Heracleidæ. The Pelasgi who remained in Greece became subject to them, as our Saxon did to our Norman forefathers. The head-quarters of the Pelasgic race was then found in Asia Minor, from which the race had originally come; and from thence their arts reacted upon Greece. The Doric architecture, however, although perhaps not older than some Asiatic Ionic, claims the earliest examples in Greece proper. The Dorians, if not akin to some of the Egyptian races, at least had inhabited Crete, and their traditions assigned to their Jupiter a Cretan origin. The intercourse between Crete and Egypt must have been considerable; and we have a remarkable connecting link between an Egyptian monument and the Greek Doric. The rock-cut tomb at Beni Hassan, in middle Egypt, doubtless is an excavated representation of some structural type, and points out that the Dorians derived the form of their column from the banks of the Nile; but derived the germ only, for where we meet with it first at Corinth, we find the dry shaft and the abacus turned by the magic of genius into a most noble form, the magnificent echinus giving it a meaning and a purpose which were merely latent in the Egyptian example. The framed timber construction of the primitive temples of Greece suggested the superstructure. But observe with what nobility and skill the type is translated into stone. The massive architrave intensely square giving value to the circular features of the columns. The frieze still square, but relieved by the upright lines of the triglyphs. The cornice, with its mighty shadow emphasised by the undercutting of the soffit, the mutules added to break up the cast shadow upon the frieze and architrave. It is unnecessary to consider at length whether the triglyphs and mutules are petrified beams and rafters. It seems likely that the wooden type suggested the idea, but in the

* At Varese, by the way, there is a similar Sacro Monte dedicated to the Virgin. The groups there illustrate the mysteries of the Rosary.

† By Mr. F. C. Penrose; read at the Architectural Association, as elsewhere mentioned.

stonework the artist has taken possession of them, and used them with creative intelligence for contrast of form, and light and shadow. Compare the poverty of the treatment of the carpentry type in the Lycian tombs, of which we have examples in the British Museum, where the details of the carpentry are shown with amusing reality, and without any feeling of repose or breadth.

The Ionic order appears to derive its origin from Persian and Assyrian prototypes; and there seems to have been considerable affinity between these races and the Ionians, whose abode also was in the western parts of Asia Minor and the adjacent islands. The exuberant growth of the Asiatic soil was refined by the free nature of the Ionians themselves, and finally perfected when grafted on to the Dorian stock, especially at Athens.

Athens, Tegea, and Bassæ contain all of which we have any record of Ionic architecture in Greece proper. The remains at Tegea have not yet been brought to light. Those at Athens and Bassæ are most important. But there are remains of great beauty in various parts of Asia Minor. The British Museum has lately been enriched with specimens from the Mausoleum of Halicarnassus of this order; and the Temple of Bacchus at Teos has lately been explored by the Society of Dilettanti and found to have been a temple of very great beauty. The prototype of the Ionic order seems to be found at Persepolis; and a bas-relief representing a fishing-lodge or pavilion has been claimed as exhibiting the germ from which the Erechtheum was developed.

If in the two cases cited, one of the Doric and the other of the Ionic prototype, it be contended that, granting these are both rightly so claimed, yet such rude elements could not have been adapted by the Dorians or Ionians without improving on them, and that improvement may be expected in proceeding from such simple and barbarous elements; but that we, who have originals both of classical and Mediæval architecture of high perfection as our prototypes, cannot proceed in the same manner, but must content ourselves with such variety as may spring from composition. It must be borne in mind that there were then existing both in Egypt and in Persia buildings of the very highest technic excellence; but the Greeks borrowed little from these, but saw what they wanted latent in these less important structures.

With the exception of propylæas, or ornamented gateways, which exist in several places most conspicuously at Athens, our knowledge of Greek architecture is chiefly confined to temples. Their private architecture was humble,—this is the secret of their great results in public works;—and the remains of their lesche and gymnasia, which served to them the purpose of clubhouses, are very slight indeed. Dicæarchus, speaking of Athens about the year A.D. 400, remarks that the streets were so narrow, and the houses so small and inconvenient, that a stranger suddenly placed in the town would doubt that he was in famous Athens, but would soon be convinced of it when he saw the Odeum, the handsomest in the world; the theatre—magnificent, great, and wonderful; the sumptuous, conspicuous, and admirable temple of Minerva, rising above the theatre, and filling the spectator with admiration.

A knowledge of the different classes of temples is necessary to our appreciation of the subject; and this cannot be better given than in the words of the late Mr. Woods, "Letters of an Architect:"—

"The cell of a Greek temple is an oblong building. In the earlier periods it was probably nearly destitute of ornament except the cornice. Afterwards, a porch was added, supported by columns, and the entablature began to receive some embellishment. Even this disposition, when the front came in view, was highly beautiful, and more so when an additional range of columns was added to the portico; after which, columns were added at the back also, by which means the variety and contrast produced by them would catch the attention from every point of view. The next step was to continue the columns all round, such as the arrangement of the Temple of Theseus.

The simple cell had, I believe, no peculiar appellation; and yet, from the great multitude of temples existing in ancient Greece, it is probable they were not uncommon. Temples of the second sort were said to be *in antis*, because in them the flank walls were prolonged beyond the front, so as to form the sides of the porch, and these prolongations were terminated in pilasters of three faces, which pilasters were called *antæ*. The third arrangement was called *prostyle*; the fourth, *amphiprostyle*; the fifth, *peripteral*. Besides these, there were also *dipteral* temples, having two rows of columns roundt he cell—such was the Temple of Jupiter Olympius at Athens; and *pseudo-dipteral*, which differed from the dipteral by the want of the inner row of columns, and from the peripteral by having a much larger space between the cell and the external colonnade. . . . .

The simple cell must always have been deficient in richness of detail; for though the walls and cornices might be richly ornamented, yet those details could not have produced sufficient effect on the whole composition. For that purpose it is necessary that the building should be divided into principal masses, whose position with respect to each other must produce some degree of variety and intricacy.

The temple *in antis* must also, in some degree, be deficient in richness; and I know of no temple of this sort which has been much admired. But the prostyle, and still more the amphiprostyle, if well proportioned, will always be admitted in the rank of beautiful buildings. From almost every point of view you see at least one column gracefully detaching itself from the mass of the building, and the nakedness of the side walls contrasts with the bright lights and shadows of the ends, and claims our admiration, even when compared with the higher finish of the peripteral temple. The eye, however, will not be satisfied with some intricacy in the disposition of the general masses. It will require a similar gratification when it comes to examine the details; and this we find accomplished by fluting the columns, moulding the capitals, dividing the frieze, at least, by triglyphs, and frequently placing sculpture at intervals between them, and adorning the pediments with sculpture, and placing antefixæ or ornamental convex tiles along the eaves."

Temples with four, six, eight, or ten columns in front were called respectively tetrastyle, hexastyle, octastyle, decastyle, &c. It is, however, impossible in a single lecture to proceed with any further analysis of the peculiarities of different temples. What concerns us most is to endeavour to catch the key-note, and see wherein the great strength of their system lies.

A state of political excitement and of considerable freedom was favourable to the perfection of the arts of Greece, and it cannot be denied that the "peculiar domestic institution," as well as the climate, which allowed the freemen ample time for moving in public and out of doors in the market-places and schools, led to keen discussions on matters of art and to the intimate knowledge of the subject which pervaded all ranks of the free population. This, however, would not have sufficed to secure the perfection in art of which we are so sensible, had not the Greeks had the good sense or instinct to confine themselves to a comparatively limited range of subject, such as working out, with moderate variations, only the classes of temples which have been enumerated; every succeeding work, up to a certain time, being an improvement on what had gone before. The oldest Doric temple which exists is the hexastyle temple at Corinth. The date is unknown, but it is impossible to assign it a date later than 600 B.C., or to suppose that the Doric order had not been developed for at least half a century previously (I wish in these dates to keep well within the mark). The most recent Doric temple in Greece proper, of any importance, is probably the hexastyle temple at Nemea, to which an approximate date of 400 B.C. may be ascribed. The temple called the Portico of Philip, in the isle of Delos, must have been built about 350 B.C.; the Parthenon was finished 438 B.C. We thus see the most versatile nation of antiquity engaged in the continuous pursuit of what seems at first sight a very simple problem during three hundred years at the least, and that two hundred years must have been occupied in working up from the example at Corinth to the higher perfections of the Parthenon, which was finished, as before mentioned, in 438 B.C., when Athens culminated under Pericles, just previous to her unfortunate collision with the military power of Sparta, when her light, although not quite extinguished, lost its lustre, and the arts of Greece followed her decline. What Greece might have produced but for the Peloponnesian war it is vain for us to conjecture: enough was achieved to make us thankful for what she did, and to invite us to imitate her principles of action.

The stages between the example at Corinth and the Parthenon (speaking of extant remains only), seem to be the Temple of Jupiter Panhellenius in Ægina, and the Theseum at Athens. The temple at Pæstum in Italy, and Selinus, Segeste, and Syracuse, in Sicily. The results of this elaboration and continuous effort in one direction were a thorough knowledge of the effect of position, harmony between the supports and voids, and exact contrasts between the round and the square, and the light and shade. They attained also a profound knowledge of the effect of perspective on the distribution of their columns. Observe the unbroken stylobate giving the temple a foot, as it were, to rest upon. The column gracefully diminishing—multiplied without being weakened by its shallow flutes tapering in such delicate curves of entasis, that in the Athenian examples, the existence of it was at first denied. The echinus—distinctly but delicately separated from the shaft by its annulets—itself a marvel of refinement. The hyperbolic curve receiving a cast shadow from the abacus of infinite gradation, and varying with every altitude and angle of the sun. The column, moreover, inclined inwards, at an angle imperceptible to the eye except by its indirect effects, viz., the feeling of perfect security, and a sense of more absolute perpendicularity imparted than if its axis had been true to the plumb line; for if columns are placed quite perpendicular, the effect is that of a slight divergence. Again, the horizontal lines are not straight and level, but are slightly curved, rising towards the centre. Otherwise the contrast of the sloping lines of the pediment with horizontal cornice was found to make them appear depressed in the middle.

Observe, too, the light and shadow caught on mouldings of exquisite form and finish, and of simple and refined proportion—contrast everywhere perfectly understood, and the most dignified reserve exhibited both in the quantity and quality of the ornament; and above all, the whole temple made the framework to receive sculpture of such surpassing merit, that even those who would fain depreciate Greek architecture have not dared to cast a slur upon it, or challenge its accepted excellence.

Surely for such an achievement as this, it was worth while to go on for three hundred years without departing much from the track of those that had gone before; to give up the luxury of designing every new building as unlike as possible to what had preceded it. This morbid desire for novelty of composition, accompanied as it is by a demand for precedent in detail, is one of the great stumbling-blocks of modern architecture, and while too much obeyed ease and breadth are impossible.

All these reflections might have been arrived at from considering the development of the grand style of the later Romanesque and the earlier Gothic from the rude modifications of the Roman type, as adapted to the uses of the day by the builders of the tenth and eleventh centuries; but the aim being much simpler in Greek architecture, and the success more perfect, it appears to give the more valuable lessons.

The question we may frequently ask ourselves with advantage is, what these architects would have done under such and such circumstances. A Greek architect certainly would not have built the cell of a temple,—a form which was essentially a shrine,—to hold a congregation of 2,000 persons, as our St. Pancras, any more than an architect of the twelfth or thirteenth century if required to design a church where a great object was to place a large congregation near the pulpit, would have encumbered the most valuable part of the space with the supports of a central tower.

It may be asked, how can we oppose ourselves to the demand for a prevalent style, or influence the taste of the public? It cannot be done suddenly. If it could, it might not be desirable. No one can choose his own line without reference to other people; but consistency and the determination to give common sense the preference over fashion whenever circumstances will permit it, will do much. Some people have dreamed of an altogether new style of architecture. This I consider quite impracticable. They would break the magnetic circle of art, and leave us, so to speak, paralysed, or in a wild state, as it were, of mental aberration. As reasonable would it be in our old families to forswear their predecessors, and give up the *prestige* of noble birth; or, as a still better analogy, it would be as unreasonable in our philosophers were they suddenly to deter-

mine to divest themselves of all they have learnt in mathematics, in the hope that something might turn up different from the course of study which has been enriched by the labours of Newton and Laplace, and thousands of others of less individual distinction, but whose aggregate labours have contributed not less than those gigantic intellects. The wish so fondly expressed for a new style of architecture, however, has its foundation in a real want. If some phase were developed, founded although it might and must be, on something which has gone before, but by no means copied from it; which was sufficiently expansive for all modern wants,—which could accept the help offered by new materials, and digest and thrive upon them,—although either classical shapes or, as it might be, Mediæval, still characterized its decorative features,—if it were something which all thinking men could conscientiously approve, we should then hear little more about the wish for a new style of architecture.

I cannot think that the present movement is unfavourable for such a development. We have almost ceased even in the Gothic revival to copy the masterpieces of the thirteenth century. I do not say to those who are enamoured of the Gothic that they should relinquish it, but I ask them to look forward a little and see what we seem to be coming to. Can anything be so incongruous as the new pseudo-Gothic buildings which are rising all around us? I do say to them,—If you consistently believe that Gothic architecture will lead to the best results; is most adaptible to the requirements of modern civilization: if it can accept the service of iron and the massive materials which ought to be used in this day, when, instead of having at our command, as the Egyptian kings, the brute labour of myriads of slaves, we have at our beck a power a thousandfold more mighty and far less expensive: choose, then, your elements out of the finest Mediæval architecture, and develope what is wanted out of them, and let all who sympathise work together continuously at the improvement of such development. I cannot but think, however, that some form or phase of the Classic architecture is more adapted for such development, especially the variety called the Cinque Cento; that is more plastic, more in unison with modern wants and feeling. To those, then, that can receive it, I would say,—Look at what was done in the North of Italy between 1450 and 1550, and to some extent also, in a similar style, in France; Germany and our own country having a few examples. It has several points of excellence in common with Greek architecture, especially the tenderness of its carved ornaments and the perfection of the sculpture with which it is generally enriched. Look, then, to the elements of this architecture, and see if something fit for our nineteenth century may not, by judicious treatment, be derived from it. The great secret, however, is, whichever way we pull, to pull altogether.

Reverse the advice which was given to young men some years ago, and perhaps is still, viz.: that we must avoid all similarity to the works of contemporary architects, for fear of being plagiarists, but may copy as closely as we please old examples. It would be far wiser, not, of course, to copy as too closely, but to steer in the same direction with such contemporary architects whose works well fulfil their purpose, and try to improve upon them. Let us remember that ease and breadth are far greater qualities than originality as now understood. Ease and breadth patiently sought for really lead to far deeper properties of originality than result from trying to design in a manner unlike our contemporaries. Natural preference and honest obedience to common sense in following the conditions of our work cannot fail to keep us from being plagiarists without taking any violent steps to avoid it: but union is strength, and pulling together in the same direction can alone overcome the inertia of the present dead-lock.

In recommending the development of the Cinque-cento, I consider that the current is now perhaps setting too strongly against Greek architecture to allow of any *point de depart* which is strongly imbued with Greek feeling; but there was one lately amongst us who more fully and intimately understood this architecture than any of the moderns—who entered into its spirit—whose mind found there something to reflect its own purity and refined elegance—whose works not in one instance show the timid hand of the copyist, but the genius of one capable of developing a new current of architecture out of the Greek type—one who rarely, if ever, allowed blind admiration for past beauties to interfere with modern requirements.

Very lately in these rooms were exhibited the sketches by that master-hand and the compositions of that discriminating and inventive intellect. His name is already in your minds, and, I may add, in the hearts of all of us who had any intercourse with him. I say distinctly, that if his works were to be chosen as a *point de depart* in all designs of a classical character that are demanded, and if our efforts were continuously exerted to improve upon them, and to reduce the style which he has mapped out more uniformly and universally into harmony with modern requirements, launching out boldly into the deep, and not refusing, if called upon, to sail where no landmarks of classical times are in sight, we should, in a very few years, have an architecture of our own equal to all our aspirations. When, in the beginning of this lecture, I spoke of our being on the whole ashamed of the results of the Greek revival, I stated that there was one remarkable exception. You will now readily understand what I was thinking of. We are *not* ashamed of Professor Cockerell's works.

VANDYCK IN ENGLAND.*

"And often took leave, but seem'd loathe to depart."
Prior, circ. 1699.

RECROSSING the English Channel, Vandyck visited Italy by way of Antwerp and Brussels. With Rubens he would appear to have parted on the most friendly terms, leaving behind him for his illustrious master's acceptance a portrait of his wife (a capital performance), an "Ecce Homo," and a night scene of the "Seizure of our Saviour on the Mount of Olives." Rubens, in return, acknowledged his pupil's compliment by the gift of one of the finest horses from his stables. Noble impulses of this nature are not common among artists. When Reynolds spoke of his rival Romney, he spoke of him as "the man in Cavendish-square." When Romney spoke of his rival Reynolds, he spoke of him as "the man in Leicester-fields."

Venice, Genoa, and Rome, first attracted and retained Vandyck's attention. At Venice he drank deeply of Titian, Tintoretto, and Paul Veronese. At Genoa he painted several portraits in what is called by some his earliest and best manner. Two were procured at Genoa by Sir David Wilkie, for Sir Robert Peel, and are still at Drayton Manor. They are companion pictures, full-lengths, seated, and represent a Genoese senator and his wife. These two portraits are valuable specimens of the master, full of truth and character, particularly the head of the old senator. In both, the hands are painted as only Vandyck could paint them. Several still remain. In the Durazzo Palace are "Two Boys and a Girl," in his finest manner, richer in colour and with more rotundity than Wilkie had before remarked in the same master.†

From Genoa he went to Rome, where he avoided the low conversation of his countrymen, and was commonly called "Pittore Cavalieresco." Here he drew his famous portrait of Cardinal Bentivoglio, one of the glories of the Pitti Palace, and the picture of Vandyck's Italian period which artists and connoisseurs alike esteem as the masterpiece of the master.

Quitting Rome he removed to Palermo, from whence he was soon driven by the plague, but not before he had extended his reputation by a portrait of Prince Philibert, of Savoy.

From Palermo he retraced his steps to Genoa, where he resided until his return (1626) to his native Antwerp. He was then twenty-six. His journey enabled him to add some of the noble qualities of the Italian school to the glowing characteristics of his Flemish style.

Memorials of what he wrought in Italy are still to be seen in Italy. I have already mentioned what remains at Genoa. In the Pontifical Palace on Monte Cavallo are two historical pictures of great value, "The Ascension" and "The Adoration of the Magi;" others are to be found in the Braschi, Colonna, and Corsini palaces,—for his was always a ready and industrious pencil.

The next six years of his life (1626—1632) were spent at Antwerp and the Hague. He was not idle. He painted three Crucifixions for three different churches; one for Antwerp, a second for Mechlin, and a third for Ghent. Sir Joshua Reynolds describes them with great minuteness in his "Notes of a Tour in Flanders and Holland;" and few who travel (*Murray-handed*) omit to read and apply the judicious observations which Reynolds was so well qualified to make. The picture at Ghent, one of his most capital works—since all but ruined by over-cleaning—is now best known by the fine engraving from it by Bolswert.

To this period of his career belong a "Marriage of St. Catherine," in her Majesty's collection; a "Virgin and Child," in the Bridgwater Gallery (the original of the fine duplicate at Dulwich); a "Virgin and Child," in the Grosvenor Gallery; an "Assumption of the Virgin," in the gallery of Mr. Hope; and the "St. Ambrosius refusing to admit the Emperor Theodosius into the church at Milan," an Angerstein picture, and now in the National Gallery in London. Other works assigned to his middle period are at Berlin, Munich, and Vienna.

Portraits, too, of this period of his pencil are numerous and fine,—none, perhaps, finer than the companion whole-lengths of Philip le Roy and his wife, bought (1850) by the Marquis of Hertford, at the King of Holland's sale, for the sum (nor was the price thought large) of two thousand five hundred guineas.

At Castle Howard is the far-famed to-the-knee portrait of Snyders, the painter, one of the treasures of the Orleans collection; and at Warwick Castle, the companion picture of Snyders's wife, from the same gallery. They have been seen together on the walls of the British Institution, and were much and deservedly admired;—Lord Carlisle envying Lord Warwick, and Lord Warwick envying Lord Carlisle. At Holkham (Lord Leicester's), is Duke Aremberg on horseback, one of the most spirited of his equestrian portraits; at Panshanger (Lord Cowper's), his Nassau family; at London, in our National Gallery, that marvel of art, the so-called "Gevartius;" and at Montagu House, Whitehall (the Duke of Buccleuch's), thirty-five sketches (*en grisaille*) for the celebrated series of portraits etched in part by himself, and published by Martin Vanden Enden.

A very celebrated picture, painted at this time, is "The Holy Family," 7 feet 0½ inch high by 9 feet 1½ inch wide. It belonged to King Charles I.; was twice sold for 1,400*l.*, and from the house of Orange was bought by Sir Robert Walpole. It hung in the large saloon at Houghton, has been well engraved, and is now at St. Petersburg. "The chief part of it," writes Horace Walpole, "is a dance of boy-angels, which are painted in the highest manner. The Virgin seems to have been a portrait, and is not handsome; and the piece is too much crowded with fruits and flowers, and birds. In the air are two partridges finely painted." In the Houghton valuation the sum placed against this picture was 1,600*l.*

In the Pell Records of the year 1629, is the following entry:—

"By order, dated the 23rd of March, 1629.—To Endymion Porter, by one of the Grooms of His Majesty's Bedchamber, the sum of 78*l.* for one picture of the story of Rinaldo and Armida, bought by him of Monsieur Vandyck, of Antwerp, and delivered to His Majesty without account, &c."

This picture, King Charles's *first* acquisition of a Vandyck, is now at Clunber, in Notts, the seat of the Duke of Newcastle, and formed No. 653 of the Manchester Art Treasures Exhibition of Ancient Masters.* It is a large picture, and is described by Dr. Waagen in a note made by him on the spot, as "fine in keeping and carefully finished;" but what the learned doctor fully means, or meant, I will not pretend to explain.†

In the appraised catalogue (among the Harleian MSS.) of King Charles's Collection, may be seen this entry:—

"Fol. 150. A piece of Nicholas Laniere to the knee. 10*l.* Sold Nicholas Laniere, 2nd November, 1649, for 10*l.*"

It was on seeing this half-length portrait of his servant Laniere that King Charles I. was induced to invite Vandyck into England. The story, as told by Sir Peter Lely (and preserved by Mr. Beale, the husband of Mary Beale, who painted portraits in the reign of Charles II.), is as follows:—

"Mr. Lely told me at the same time as he was most studiously looking at my bishop's picture

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* See p. 40, *ante*.

† See Wilkie's Journals in his Life by Allan Cunningham, 3 vols. 8vo.

* I may mention in a note that the information in the text was unknown to Mr. Scharf, the compiler of the catalogue of "Paintings by Ancient Masters."

† Sir Robert Peel had a sketch in sepia of the same subject (Waagen, Art Treasures, i. 415).

of Vandyck's, and I chanced to ask him how Sir Anthony could possibly devise to finish in one day a face that was so exceedingly full of work and brought up to so extraordinary a perfection. 'I believe,' said he, 'he painted it over fourteen times;' and on that he took occasion to speak of Mr. Nicholas Laniere's picture of Sir Anthony Vandyck's doing, 'which,' said he, 'Mr. Laniere himself told me, he sat seven entire days for it to Sir Anthony, and that he painted upon it of all those seven days, both morning and afternoon, and only intermitted the time they were at dinner.' And he said, likewise, that though Mr. Laniere sat so often and so long for his picture, that he was not permitted so much as once to see it till he had perfectly finished the face to his own satisfaction. This was the picture which being shew'd to King Charles I. caused him to give order that Vandyck should be sent for over into England."

This fine picture, long in the collection of Lord Chancellor Henley at the Grange, in Hampshire, is now (1864) the property of the Marquis of Westminster.

Of Nicholas Laniere, made immortal on canvas by Vandyck, so little is known that I may be excused a short digression concerning him.

There were two Lanieres of the same Christian name in England between the years 1560 and 1646, well-known men at court in the reign of Queen Elizabeth, King James I., and King Charles I.

In the M.S. accounts of the Treasurer of the Chamber to Queen Elizabeth, the following entries (now first published) are to be found:—

"Payd to Nicholas Lannyer flute in the rome of Gillm Troches deceassed upon the Q. Ma's warrant donn during lief dated at S^t. James' the xxv^th of October A^o. iij^o [1560] for his wages of xx^d. ℔ diem—vij^li. xj. viij^d. yerely for his boarde wages and xiij^li. vj^s. viij^d. yerely for his lyuery all to bee payde quarterly dew unto him for one hole yere ending at Mich^as A^o. iiij^o. lj^li. vj. viij^d. and also in waye of her Ma's rewarde for that tyme onely xiij^li. vj^s. viij^d. In all lxiiij^li. xiij^s. iiij^d."

"Payde to Nicholas Lanyer musicon for the flutes upon the counsell's warrant dated at Westm^r. the last daye of March 1561 [4th of Eliz.] being sent w^th. Letters into Fraunce to S^r. Nicholas Throgmorton x^li."

These entries relate to the father; the following relates to his accomplished son—Vandyck's sitter:—

"The accomptaunte is allowed for money paid to Nich^as Lanceer his Ma's servaunte for provicon of pictures in the partes beyond the seas for his Ma's service by Privy Seal and acquittaunce xviij^xx. vij^li. vij^s."

That is 18,700*l.* 7*s.* of the reign of Charles I. money, or some 57,000*l.* of the money of Queen Victoria; in other words, as much as England gave in the reign of George IV. for the Angerstein collection.

I will now return to Vandyck.

There was a man much employed at this time by the king and the Duke of Buckingham, and Lord Treasurer Weston,—conceited and crazy,—in short, a second Sir Toby Matthew. This was Sir Balthazar Gerbier, to whom I have had occasion already to refer: a kind of Dominus Do-all, painter, architect, negotiator and gossipping correspondent of great men: what he himself was like and what his family were like many will call to mind who remember the large family Gerbier group in the Rubens Rooms at Windsor. It was this Gerbier who bought abroad Vandyck's "Virgin and St. Catherine" for Lord Treasurer Weston; it was with this Gerbier, in his house in the Strand, that Rubens was lodged (as I have already had occasion to relate) during his visit to England, the king paying the charges of Sir Peter's entertainment; it is the same Gerbier who gives us the next earliest notice of Vandyck. Writing from Brussels on the 13th day of March, 1632, he informs King Charles I. that Vandyck was at Brussels and resolved to go over into England,—"*Et fait dire qu'il est resolu d'aller en Angleterre.*"

That he was expected in England there cannot be a doubt, for among Secretary Windebank's memoranda of "things to be done," still preserved in the State Paper Office, Mr. Carpenter discovered the following interesting entry:—"To speak with Inigo Jones concerning a house for Vandyck." He would appear to have arrived among us before any arrangement could be completed, and to have taken up his residence in the Blackfriars with Edward Norgate, a herald and illuminator, Keeper of his Majesty's Organs, and ultimately Clerk of the Signet to King Charles. On the 10th of May, 1632, a warrant was issued by the king for an allowance to Norgate of 15*s.* a day "for the diet and lodging of Signor Antonio Vandyck and his servants, to begin from the first day of April last past, and to continue during the said Vandyck's residence there."* This fixes the date of Vandyck's arrival in England: he came to reside and die among us on the 1st of April, 1632.

No one has told us why Vandyck went to live in the Blackfriars; but his reason for going there is at once characteristic and delicate. Mr. Carpenter supposes that "the Crown must have held property at this time in the Blackfriars, for the Count de Tillier, ambassador from France, in the latter end of the reign of James I. was lodged there; and Walpole states that Cornelius Jansen dwelt in the Blackfriars." There is no authority, however, for supposing that the Crown at this time held property in the Blackfriars, nor is there any necessity that such should have been the case to account for Vandyck's residence there. The painters of the reigns of James I. and Charles I. who settled in London, or visited London, lived without the City liberties; and they had two favourite places—the Blackfriars, then a privileged precinct for Puritan feather-makers, players, and painters; and the Strand and St. Martin's-lane, then, as long after, a fashionable quarter of the town, and near the Court. Mr. Carpenter, in mentioning Cornelius Jansen's residence in the Blackfriars, has omitted to refer to the more interesting circumstance, that Isaac Oliver and his son, Peter Oliver, great masters in the art of limning, lived there before him. Lady Ayres, wishing to have a copy of Lord Herbert of Cherbury's portrait, to wear in her bosom, went "to Mr. Isaac, the painter, in Blackfriars, and desired him to draw it in little after his manner."† The Painter Stainers' Company was at this time an active and acting company; and the rules they issued and the fines they levied on painters (foreigners especially) pursuing their callings *within* the limits of the City were extremely stringent and heavy. By living *within* the Blackfriars, the picture-drawers, as they were then called, were *without* the jurisdiction of the Painter Stainers; and this is amply sufficient to account for the selection of a locality of this kind. At the bottom of St. Martin's-lane, when Vandyck was before in England, lived Vansomer; and at the period of his present visit Mytens was living in St. Martin's-lane, about half-way up on the west side, two doors from Sir John Finett, Master of the Ceremonies to the King, and three from Sir Theodore Mayerne, physician to the King. Of the two localities which custom prescribed for painters at this time, Vandyck would appear to have selected the Blackfriars, though farther from the Court, because Mytens was already established in St. Martin's-lane, and his taking up his residence there would have looked like indecent opposition; while the Blackfriars, by the removal of Cornelius Jansen to Bridge, near Barhamdown, in Kent, was without a painter of either reputation or promise.

A painter of great promise—of promises amply fulfilled—set up his easel in the Blackfriars of London in the year 1632. What wonders he wrought, what thoughtful faces and lovely eyes, what manly forms and graceful figures he was to perpetuate, with a skill as yet unsurpassed, perhaps unequalled, will form the subject of my next communications. PETER CUNNINGHAM.

* Lord Chamberlain's Warrant Book MS. in the Lord Chamberlain's office.

† "Lord Herbert of Cherbury's Autobiography." See also "Isaac the French Painter in the Blackfriars," in "Court of James I." vol. i., p. 145.

BETHNAL GREEN.

OUT of evil good sometimes comes; and we are not without hope that the neglect, mismanagement, and want of proper feeling shown by the board of guardians of this large district, will be the means of causing the laws which are at the present time in force to be stringently applied, and will, if necessary, lead to fresh enactments, which would be the means of protecting the lives of the poor and distressed. It is difficult to understand the principles upon which the Bethnal-green guardians act: their operations are as contrary to all the rules of common sense as of justice and humanity. They have so far set at defiance public opinion, and seem to pride themselves on the "bars" which prevent the poor from obtaining proper relief.

It is impossible to convey any notion of the deep distress which rages here,—no pen could describe it,—no pencil could give a clear picture. Yet read the following note from the *Daily Telegraph*:—"Mr. Collins (the chairman) congratulated the board that, while there were eighty-eight applications this time last year, there were none at present. Amongst the applicants who had declined the test, was a widow, with four children. Mr. Collins thought that an exception might be made in favour of such parties." There was positively considerable discussion before this boon was granted.

So great is the misery here, that it is difficult to know where to begin, to convey some idea of the condition of a large part of the district. The more we investigate the more terrible appears the state of peril in which a great multitude are placed. Fortunately, the severe weather has ceased.

As we pass along, calling at house after house, we find in room after room the same deplorable depth of poverty. In some, women and children are without coal, and are sheltering for warmth in their miserable beds. It is not, upon the average, in one room in six that there is any bedstead,—only a bundle of black-looking rags in a corner. In one apartment a woman and her daughter were busy making lucifer-match boxes. The floor was covered with some hundreds of them, and, work as hard as the two could, they were not able to earn more than 5*s.* a week. The rent is 1*s.* 6*d.* a week, leaving 3*s.* 6*d.* for food. The girl, about sixteen years of age, looked modest and well-mannered, and might be useful as a domestic servant, but her clothes were in such a bad state that she could not seek for any employment in that way. In this instance, and in many others, at a very small cost, young girls might be rescued from extreme poverty and temptation, and put in the way of earning a respectable living. In one room, in No. 2, Shepherd's-court, we found the family of a house-painter who had been some time out of work. Notwithstanding the broken ceiling, everything in the place was perfectly clean. One child was sick without any hope of recovery. It had been attacked by scarlet fever, which had been followed by dropsy. Here were complaints of the neglect of the parish medical officer, but into these it would scarcely become us to enter. In this place and in others the eyes of the sick children have an anxious gaze, which haunts us long afterwards. In bustling thoroughfares, in the midst of crowded rooms, and in the still hours of the night, those imploring eyes seem to urge the continuance of a painful duty, in the hope that even the Bethnal-green Board of Guardians may be induced to do something for suffering humanity. This man and his wife has usually lived in houses of the same description as this, and of thirteen children only five are now alive. Before long the number will be four.

The ingenuity which is shown by the managers of ill-drained and ill-conditioned property—when reports are made to the magistrates, and orders for necessary changes given,—to evade what is required to be done, is remarkable. On the pretence of doing what is needful, persons are set to work, who make some show at the entrance of courts and elsewhere, leaving the more important parts untouched. During this last inquiry, the opinions before expressed are more strongly confirmed, that in such a neighbourhood as this, the health of the poor should not be trusted to the Vestry Board. Some of the worst property—the most neglected—belongs, we are told, to a clergyman, who is also a *member of the Board of Guardians of this parish.*

The sanitary staff of the police, without any parade, but with great firmness, continue to perform their difficult duty; and the comparison between their work and that of the parish inspector of nuisances, is remarkable. Mr. Price, the police inspector, is not satisfied with one visit to an unwholesome place, but sees that what is ordered to be done is thoroughly carried out. The progress of improvement in this way is slow; but so far as the means afford, it is sure, and will, we trust, be carried forward to a much greater extent. The back-slums must be looked to, even when the outward appearance of a place would deceive many who have had experience; for instance, we will just glance at one spot, in Church-street, Bethnal-green. We see a barber's shop, gaily decorated: at each side of the door is the representation of a bear, with the announcement that the genuine article, bear's-grease, is to be had there: inside the place is smartly fitted up, and there are indications of prosperous circumstances,—notwithstanding, there have been nine cases of typhus-fever in the house and one death. The proprietor of the shop, at the time of our visit, was himself dangerously ill of this preventible complaint. Although at first there might seem to be no

proximate cause for this disease, when the premises are looked at the reason is evident. Except in those parts of the premises which the hair-dresser has put in order at his own expense, the place is miserably dilapidated; but bad as this is, the state of the drainage is far worse: from the untrapped closet passes an imperfect brick drain, which allows the poisonous gases to be distributed throughout the house.

ECONOMY OF FUEL IN STEAM ENGINES.

WE very much doubt whether the warning of Sir William Armstrong will have much indirect effect on the consumption of coal,—time alone will show. We hope, indeed, that the time is far distant when coals will be taken to Newcastle; but there can be little doubt that a good many of the coals yet at Newcastle might be saved. Prodigious quantities of what is in truth the heat, the light, the power of England, are being hourly converted into a gaseous form, and launched unconsumed into the vast airy ocean. Ceaselessly are heaps of fuel poured down the greedy throats of blast and other furnaces, boiler fires, and, not least, innumerable kitchen grates. There are, however, certain situations of, and uses for, the steam-engine, in which economy in the use of fuel is absolutely needed. A pretty large factory owner, for instance, with (say) 200-horse power on his premises, finds that economy of fuel, even where coal is cheap, means a large annual income. He knows that he cannot get an economical engine without some additional complication of its parts, but he also finds that the slight additional cost of repairs is more than counterbalanced by the coal bills. Not that factory owners, as a rule, are very economical in fuel. A tabulated statement now before us,—by the excellent Manchester Association for the Prevention of Boiler Explosions,—shows that the average consumption of fuel during the year 1860, in and about Manchester, was not much less than 7 lb. or 8 lb. per horse-power per hour. It appears to us that we may expect further improvements in the economical use of steam in those forms of the steam-engine in which it is either self-propelling or has to be carried about. Economy of fuel means economy of water; economy of fuel and water means a saving in steam and water space, and thus, as a further result, a saving in boiler-power, weight, and space. In no form of the self-propelling engine besides that of the marine engine is condensation admissible,—from the great quantity of water required for the operation. We are thus mainly thrown on the resources to be found in the use of high-pressures of steam, and of expanding these high-pressures down to the atmospheric limit. Of course there are other means of saving fuel,—such as a very careful combustion of the coal, heating the feed-water, super-heating the steam, and other plans. A thorough and careful expansion of the steam appears to us the most legitimate way of saving fuel. An only very partial expansion of the steam is carried out in the railway locomotive by means of the cap of the slide valve, and the expansion slide link;—it remains to be seen whether the conservative tendencies of locomotive engineering—enforced by the great need for simplicity on railways—will be overcome by some good mechanical arrangement. There is undoubtedly at present a great demand for economy of fuel in the portable and traction engines now used by building contractors, and by farmers for ploughing and thrashing. Here, again, comes into play what we may term the locomotive tendency towards economy of fuel. The cost of coal in ploughing is something like one-third of the expenses, and water and coal carrying make additional holes in the farmer's pocket. A great impediment to the general introduction of the traction engine lies in the absence of stations on common roads where it may take in its provisions of coal and fuel. A camel in the desert of Sahara, after having drunk up the water in what engineers would call its stomach tank, is not as helpless as our great monsters of traction engines far away, on a country road, from any supply of water or fuel. The economy of fuel in steam-engines is a vast subject, involving very many interesting problems in thermodynamics, requiring for their practical solution often very ingenious arrangements. For it may be laid down as an axiom that no economy of fuel can be got without some additions to the condensing steam-engine, some additional complication, if you like, and if the ordinary cylinder and piston, fed by a common slide valve, be accepted as the *beau idéal*, the *summum bonum*, the *ultima ratio* of engineers.

We have just examined what would appear to us a very efficient way of using steam.

At the New Foreign Office, now being erected by Messrs. Smith & Taylor, a portable engine is employed in working a set of stone-sawing frames. The engine appears at first sight like the ordinary 8-horse engine of the makers—Messrs. Hornsby & Sons, of Grantham. It will, however, be noticed that the cylinder is a little larger than twice the throw of the crank. It will be seen that the inventor aims at getting the advantages of a double-cylinder compound engine by means of one cylinder alone. This is, indeed, the leading idea of the construction of the engine, which is denominated "*a double-expansive single-cylinder steam engine*" by its inventor, Mr. E. E. Allen. A section of the cylinder shows that this long cylinder is divided in the centre, and on this division works a trunk, at either end of which is a light piston, held together by the piston rod,—in this case, a pistons' rod. Each of the two pistons works between the cylinder cover at the end and the division in the middle. There is thus a necessity for a separate slide-valve, and separate inlet and exhaust ports to each piston. On starting the engine, steam at the boiler pressure enters first the annular space through the steam port, and it may be cut off at 5-8ths of the stroke by means of the cap on the valve. The exhaust steam from the annular space having done its work therein, is fed through the D-slide valve into the other end of the cylinder on the whole surface of the piston, and is at last exhausted from thence by the ordinary means. The return stroke is effected in the same way with the other half of the double cylinder. It will thus have been seen that the expansion is in the ratio of the area of the annular space to that of the whole piston—besides that afforded in the annular space by the cap of the valve. The valves are packed at the back in order to take off the steam pressure. The inventor purposes to adapt his cylinders to any engine where this may be feasible,—in fact, to accomplish with the horizontal engine what was attempted with the beam engine, by the so-called MacNaught system. We have seen some excellent indicator diagrams of these engines. It is a very great pity that this engine was not publicly tried on the friction brake, at the Worcester Show of the Royal Agricultural Society. It would then have been in strict competition with these complicated and unpractical *tours de force* racing engines. Mr. Allen will have to wait till 1866, we believe, for the next trials of this kind. The engine at the Foreign-office is stated to consume less than half the fuel used by engines of the same class. Of course, this is no accurate comparison. The peculiarity generally adopted by the Messrs. Hornsby, of putting their engines inside the fire-box, will be in this instance, where expansion is carried so far, highly beneficial—perhaps for the first time. We have every hope that this engine will stand the searching test of practice. Of course, cavils could be raised against it; but we know too well the usual difficulty of introducing an improvement, to increase the difficulty in this case by anything we might utter. Success, and success alone, makes engines, as well as statesmen,—shall we also say engineers?

THE DECAY OF BUILDING STONES.

IN the discussion which took place on the reading of Dr. Voelcker's paper on "The Effect of Smoke in producing Decay in Building Stones,"

Mr. C. H. Smith said,—He had often been perfectly bewildered by the many scientific theories that had been propounded in reference to this subject. The paper had not alluded to the great variation in quality even in the same description of stone. As regarded Caen and Bath stones, they had been treated as being usually of one quality; whereas, it was well known that in every quarry of this stone there were four or five different varieties, as distinct from each other as possible; therefore it was not right to treat of it merely as Caen stone. The same might be said of Bath, Portland, and all the other oolitic stones. If it were left to the builder or mason, he would soon find out the softest in the quarry, for it could be worked with half the labour that was required for the harder kinds, besides making the finest looking work when it was finished; and it was owing to this often occurring that an almost incredibly rapid decay of the material took place. In every district of the Caen stone there were eight or ten different quarries, and each of these had five or six different beds, so that there were at least fifty varieties of Caen stone, all varying in some respects from each other, and many of them of an inferior character. The decay of the stone in building was, therefore, in a great measure, owing to the bad selection of the material in the first instance. He had seen many instances of this, both in London and the country. He could mention many public and other buildings in London and elsewhere, in which the decay of the stone had been almost as striking as in the case of the specimens on the table. The Roman Catholic Church of St. George was almost as bad as it could be. The structure had been built within the memory of most present, and yet the stone was in a complete state of decay. The materials used were Caen and Bath stone, but not of good quality; and it was, therefore, in his opinion, more important to be able to select the best qualities of stone, than simply to ascertain their chemical constituents. Generally speaking the stonemason could tell, almost at a glance, the good and bad qualities of stone; but it was often not his interest to say anything about it. To give an instance of good and bad qualities of stone of the same kind, he would mention Portland stone, which had been used in London a great deal since the time of James I. The Chapel Royal, in Whitehall, was one of the first large buildings erected of that material, and Sir Christopher Wren used it for all his churches. The Monument on Fish-street-hill and Temple Bar were both constructed nominally of the same stone, and while the bas-relief representing the Great Fire of London was as perfect as possible, without a bad stone in it, it was well known in what a state of decay the west front of Temple Bar was, with exactly the same aspect. The different states of preservation of the two buildings were entirely owing to the different qualities of the same description of stone. At Somerset House, again, there was another remarkable instance of this. The river front was built by two different masons, under the same architect. One built the upper part and the other the lower. The part below the terrace was as black as could be, and was at the same time remarkably perfect: the upper portion was almost white, and there was scarcely a good stone in it; yet both portions of the building were of the same aspect, and the portion nearest the water was perfect, while that which was farthest from the water was very much decayed. It was after the bad stone had been used that chemists were set to work to try and find out something to stop the decay of our large public buildings, whereas the better plan would have been to have taken more care in the selection of the stone. He believed several thousand pounds had been expended upon the Houses of Parliament in trying processes to prevent decay, but up to this time he was not aware of any plan that was practically useful. A specimen was put into his hands some time ago to show how far the indurating material employed in one of these processes had penetrated into the stone, and he found that it had entered as far as three quarters of an inch; but that stone had been in the first instance put into a hot-air chamber to drive out all the moisture, and afterwards immersed in the boiling fluid, and by that means this result had been produced; but he need hardly say that it was not possible to put the Houses of Parliament or Somerset House either into a hot-air chamber or into a boiling fluid. Those appliances answered in the laboratory, but not in practice. His own opinion was that any of the substances at present known applied to the preservation of stone would not be neutral in their effects: they would either tend to preserve it or to hasten its decay. A great deal had been said in the paper as to the effect of water on stone: his own belief was, that if the stone was really good the water would have little or no effect upon it. By experiments he had made, he found that a cubic foot of Caen stone would absorb two gallons of water without showing more than a slight dampness on the surface. Hardly anything was more absorbent of water than a well-burnt grey stock brick; yet it was a very durable material. Mr. Smith referred to the church of St. Dunstan, in Fleet-street, as an example of exceedingly porous limestone exposed to the London atmosphere; and yet it had proved very durable. The decay of bad quality of stone was by no means restricted to London or other large cities, the

atmosphere of which was impregnated with the acids, &c., to the effects of which the destruction of stone was attributed by scientific men. The town of Oxford presented a remarkable instance of this. He knew of no town in so deplorable a state in this respect; and he attributed it entirely to the injudicious selection of the quality of stone. The effects of varieties of temperature upon stone had not been sufficiently taken into account. The extreme difference in the temperature of winter and summer in this country might be stated at 100 degrees. That, in his opinion, had more effect in producing the decay of stone than anything else. Take the case of a building exposed to two different aspects, such as the Horse Guards, which was built throughout as nearly as possible with the same stone. The north and east sides of that building were blackened and in a perfect state, while the decay was principally observable upon the sides facing the south and the west; owing, as he believed, to the greater variations of temperature to which they were exposed. Dr. Voelcker had implied that limestones were unfit for outdoor carvings, and if so, he should be glad to know what sort of stone was suitable, because they could only carve at great expense in sandstone; and, moreover, it was more or less laminated, and, in order to be durable, required to be put up in the position in which it was laid in the quarry, otherwise it became exfoliated.

Mr. G. F. Wilson, F.R.S., thought that Dr. Voelcker had treated this subject in a strictly practical manner. When a scientific chemist in the position of Dr. Voelcker explained what the particular form of decay in the stone was, showing that so large a proportion as fifty per cent. of sulphate of lime was present, it must direct the attention of practical men to the importance of using those particular kinds of stone which were not so liable to be acted upon by the sulphate of ammonia in the sooty atmosphere. The remarks of Mr. Smith, as to choosing the best portions of stone in a particular quarry, were very important. Dr. Voelcker attributed the decay of particular kinds of stone to the corroding effect of the black smoke of large towns forming an incrustation which reacted on the stone, somewhat in the same way as tartar acted upon the teeth, only with a different chemical reaction. That subject had been treated of several times in this room, and the different modes of getting rid of the smoke which occasioned the evil had been considered. A very simple method of preventing smoke in house fires was stated to be the having a grate with a false bottom and putting the coals in below, and removing them when in a glowing state from the bottom to the top of the grate.

Dr. Bachhoffner remarked that, judging from what had fallen from his friend Mr. Smith, every architect should be a Hugh Miller: but he thought very few architects could give that time to the study of geology which was requisite to bring them up to the practical standard suggested by Mr. Smith, as judges of the different qualities of stone. Hence the advantage of this Society and of the admirable paper brought before them this evening. He had not heard anything in the remarks of Dr. Voelcker as to discarding of limestones, and he apprehended that their disuse for ornamental purposes was not suggested; but the novel point with him, and one which was of considerable importance, was the action of the sulphate of ammonia in the soot producing double decomposition, and thus contributing to the decay. He knew no reason why every household should not be made to consume its own smoke. Mr. Wilson had alluded to a plan which he (Dr. Bachhoffner) patented some years ago, but no one would take the trouble to employ it. It had been shown by Dr. Arnott and many others that the proper way of lighting a fire was from the top. Lighting from the bottom was a wasteful plan, for the heat distilled the coals at the top, and their heat-producing qualities were thus to a great extent lost. A fire lighted in the way he had just recommended would remain alight for four or five hours, and require no stirring. He thought Dr. Voelcker was quite right in saying that smoke was the cause of the destruction of stone in buildings, and he supposed they must submit to this till the legislature made it imperative that every house should consume its own smoke. The table in the paper showed them that whilst the original composition of stone contained only one-tenth per cent. of sulphate of lime, in the decayed stone fifty-one parts out of 100 were converted into this salt.

Mr. F. A. Abel remarked, that there was no doubt the facts brought before them in this paper formed an important contribution to our knowledge as to the various causes which brought about the decay of stone. Mr. Smith had properly called attention to the importance of selecting proper descriptions of stone, of uniform quality, in future buildings; but it must be remembered that we had to deal with buildings already erected. With regard to the effects of moisture and of the different salts contained in soot, they were deserving of great consideration. Those who had given attention to the decay of stone would have noticed, that where the stones remained moist, as they would in some parts of a building, there the decay was greatest. This was not alone owing to the disintegrating action of the moisture, but was due, in a great measure, to the absorption of the saline materials which constituted so large a proportion of the composition of soot. On one point he differed from Dr. Voelcker—that was, as to the preservation of stone by artificial means. He had led them to believe that such a process as Mr. Ransome's would be successful. In that he (Mr. Abel) did not agree. In the composition used by that gentlemen there were different salts, which, by chemical reaction, were intended to deposit an insoluble substance upon the surface and within the pores of the stone. Doubtless this insoluble substance, silicate of lime, was produced; but there was also produced a soluble substance,—common salt,—which soon dissolved away, and left the pores of the stone open. The result was, the stone was not permanently protected; indeed, not more effectually than if some such substance as beeswax were applied, which for a time would fill up the pores of the stone, but would soon decay and require renewal. If they could discover a process (and he did not despair of this) by which they could get a preservative matter into the pores in a perfectly insoluble form, it would no doubt be valuable. To that end they were tending. He believed it was not impossible to deposit silica in a hard form in the pores of the stone without also depositing a soluble salt, and in this way they would effect what Dr. Voelcker had shown to be so desirable to prevent the decay of stone.

Mr. Bishop could state that what had been treated of as occurring to buildings in this country, took place to a considerable extent in other parts of the world, under totally different climatic influences. The English church at Alexandria, although erected only six or seven years ago, in sandstone, already exhibited signs of decay in some parts, particularly in the ornamental portions; whilst the mosques in Cairo, which had been built hundreds of years, also of sandstone, were in the most perfect preservation, and the richly-ornamented domes of those buildings, exceeding anything we have in this country, remained perfectly sound. Damp had been spoken of as having a great effect upon some description of stones. In Alexandria, however, there was no rain whatever for eight months in the year, but there was a palpable dampness in the atmosphere of an evening. He had no doubt the stones took up a great portion of that dampness. On visiting the obelisk at Heliopolis, on the sides on which the current of wind set, there was an incrustation nearly half an inch thick, with slight vegetation upon it. That appearance was presented on only two sides of the obelisk, and there must be some considerable degree of moisture to fix that earthy matter. A similar appearence was presented by the stones all over Egypt: there was something deposited on them which would produce vegetation if there were sufficient moisture for that purpose. With regard to the destructive influences of frost upon stone, they were, no doubt, considerable, though in many places in the East, where there was no frost, the stone was, nevertheless, much decayed. The Colosseum at Rome, though built of a very porous stone, was in excellent preservation. The Cathedral of St. Peter was built of the same kind of stone, as were most of the buildings in Italy which were not of marble. It was very porous, though also very durable. The Cathedral of Cologne appeared to have suffered from the decay of the stone more than any similar building in this part of Europe, and many portions had to be entirely rebuilt. With regard to Caen stone, as far as his own knowledge went, it appeared that those stones which contained the greatest portion of silica were the best resistants of the influences of the weather.

The Chairman (Mr. Hawes) proposed that the thanks of the meeting be given to Dr. Voelcker for his paper. This paper was of a highly practical character, containing, as it did, a collection of chemical results obtained by experiment upon decayed stones taken from various buildings. It was true that no remedy had been suggested in the paper, but perhaps that was not the object, but rather that of eliciting discussion and information. This was the kind of paper most likely to bring out that information, either as to what stone should be avoided, or how to make the material employed more durable. Mr. Smith had given them another set of facts, those of his experience as to the differences between one bed of stone and another. He had also shown how, in the same building, different degrees of disintegration in the same description of stone had taken place. Taking the instance of Somerset House, he had stated that the lower parts and those nearest to the water had suffered less than the higher portions of the building. Then, with respect to the Horse Guards, Mr. Smith had told them that the northern and eastern portions were less decayed than the southern and western, and this he attributed to the greater change of temperature to which the latter were exposed, but it must be remembered that these were also exposed to the winds most prevalent in this country; therefore, the condition of the stone being originally the same, we must infer that the sides of the building exposed to the winds and rains nine months out of the twelve would be mechanically acted upon to a greater extent than the other parts, and there would also be a larger quantity of sulphur salts thrown upon those portions. These causes combined, no doubt produced that difference which Mr. Smith had very truly stated. Here were the observations of a practical man pointing out where the decay took place, but he did not show them how the evil was to be avoided. Dr. Voelcker had shown them the chemical changes which took place in certain descriptions of stone, and in the case of the specimens of dilapidation exhibited this evening, it appeared that this destruction was going on while the restorations were in progress, so rapid was the decay in some instances.

WOOD SAWING AND SHAPING MACHINES.

AN invention has been patented by Mr. J. W. McCarter, of Londonderry, and is described with engravings in the *Engineer*. It comprises improvements applicable to machinery for sawing wood, and more or less to other wood-cutting machinery. Deal frames upon his plan are sawing thirty-two deals per hour, two being cut at the same time. The invention does not relate to the saws with their frames and guides. The first portion of the invention relates to an improved silent feed motion, the principal part of which is a disc fixed on a shaft driving the feed roller shafts. A second portion of the invention relates to improved rollers for carrying, moving, and guiding the wood through the machine, these rollers being so contrived as to dispense with the fence, side rollers, weights, and springs hitherto employed. —— Another invention, by Henry Wilson, of London, is described as consisting in the construction of machinery whereby wood is shaped, either one piece or several pieces at one time, to the form of a metal or other suitable hard template or guide by means of rotating cutters, which act upon the wood in the direction of the grain, whereby a smooth and even surface is obtained. These inventions cannot be fully described without the aid of the engravings.

THE COTTAGES AT HARTWELL AND STONE, BUCKS.

A CORRESPONDENT urges that our informant "was misled in regard to the proprietorship of some of these cottages; for, although the acreage of the two parishes does principally belong to Dr. Lee, many of the cottages in question do not. Even where there is a row of connected dwellings," he goes on to say, "only a portion of these belongs to Dr. Lee. The doctor maintains a large staff of bricklayers and carpenters, whose duty it is, under the direction of an inspector, to enlarge, reinstate, or repair both farm-premises and cottages."

We are very glad to find that Dr. Lee's friends repudiate for him the ownership of the dog-holes at Hartwell, and that we were misinformed in that respect. All we will say is, that the people thereabouts should also be set right in their knowledge; for it was not one informant, but half a dozen informants, who gave us the

proximate cause for this disease, when the premises are looked at the reason is evident. Except in those parts of the premises which the hair-dresser has put in order at his own expense, the place is miserably dilapidated; but bad as this is, the state of the drainage is far worse: from the untrapped closet passes an imperfect brick drain, which allows the poisonous gases to be distributed throughout the house.

ECONOMY OF FUEL IN STEAM ENGINES.

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that was practically useful. A specimen was put into his hands some time ago to show how far the indurating material employed in one of these processes had penetrated into the stone, and he found that it had entered as far as three quarters of an inch; but that stone had been in the first instance put into a hot-air chamber to drive out all the moisture, and afterwards immersed in the boiling fluid, and by that means this result had been produced; but he need hardly say that it was not possible to put the Houses of Parliament or Somerset House either into a hot-air chamber or into a boiling fluid. Those appliances answered in the laboratory, but not in practice. His own opinion was that any of the substances at present known applied to the preservation of stone would not be neutral in their effects: they would either tend to preserve it or to hasten its decay. A great deal had been said in the paper as to the effect of water on stone: his own belief was, that if the stone was really good the water would have little or no effect upon it. By experiments he had made, he found that a cubic foot of Caen stone would absorb two gallons of water without showing more than a slight dampness on the surface. Hardly anything was more absorbent of water than a well-burnt grey stock brick; yet it was a very durable material. Mr. Smith referred to the church of St. Dunstan, in Fleet-street, as an example of exceedingly porous limestone exposed to the London atmosphere; and yet it had proved very durable. The decay of bad quality of stone was by no means restricted to London or other large cities, the

atmosphere of which was impregnated with the acids, &c., to the effects of which the destruction of stone was attributed by scientific men. The town of Oxford presented a remarkable instance of this. He knew of no town in so deplorable a state in this respect; and he attributed it entirely to the injudicious selection of the quality of stone. The effects of varieties of temperature upon stone had not been sufficiently taken into account. The extreme difference in the temperature of winter and summer in this country might be stated at 100 degrees. That, in his opinion, had more effect in producing the decay of stone than anything else. Take the case of a building exposed to two different aspects, such as the Horse Guards, which was built throughout as nearly as possible with the same stone. The north and east sides of that building were blackened and in a perfect state, while the decay was principally observable upon the sides facing the south and the west; owing, as he believed, to the greater variations of temperature to which they were exposed. Dr. Voelcker had implied that limestones were unfit for outdoor carvings, and if so, he should be glad to know what sort of stone was suitable, because they could only carve at

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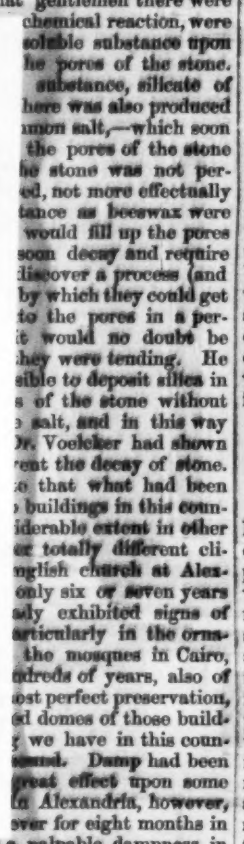
Mr. F. A. Abel remarked, that there was no doubt the facts brought before them in this paper formed an important contribution to our knowledge as to the various causes which brought about the decay of stone. Mr. Smith had properly called attention to the importance of selecting proper descriptions of stone, of uniform quality, in future buildings; but it must be remembered that we had to deal with buildings already erected. With regard to the effects of moisture and of the different salts contained in soot, they were deserving of great consideration. Those who had given attention to the decay of stone would have noticed, that where the stones remained moist, as they would in some parts of a building, there the decay was greatest. This was not alone owing to the disintegrating action of the moisture, but was due, in a great measure, to the absorption of the saline materials which constituted so large a proportion of the composition of soot. On one point he differed from Dr. Voelcker—that was, as to the preservation of stone by artificial means. He had led them to believe that such a process as Mr. Ransome's would be successful. In that he (Mr. Abel) did not agree. In the composition used by that gentlemen there were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The Chairman (Mr. Hawes) proposed that the thanks of the meeting be given to Dr. Voelcker for his paper. This paper was of a highly practical character, containing, as it did, a collection of chemical results obtained by experiment upon decayed stones taken from various buildings. It was true that no remedy had been suggested in the paper, but perhaps that was not the object, but rather that of eliciting discussion and information. This was the kind of paper most likely to bring out that information, either as to what stone should be avoided, or how to make the material employed more durable. Mr. Smith had given them another set of facts, those of his experience as to the differences between one bed of stone and another. He had also shown how, in the same building, different degrees of disintegration in the same description of stone had taken place. Taking the instance of Somerset House, he had stated that the lower parts and those nearest to the water had suffered less than the higher portions of the building. Then, with respect to the Horse Guards, Mr. Smith had told them that the northern and eastern portions were less decayed than the southern and western, and this he attributed to the greater change of temperature to which the latter were exposed, but it must be remembered that these were also exposed to the winds most prevalent in this country; therefore, the condition of the stone being originally the same, we must infer that the sides of the building exposed to the winds and rains nine months out of the twelve would be mechanically acted upon to a greater extent than the other parts, and there would also be a larger quantity of sulphur salts thrown upon those portions. These causes combined, no doubt produced that difference which Mr. Smith had very truly stated. Here were the observations of a practical man pointing out where the decay took place, but he did not show them how the evil was to be avoided. Dr. Voelcker had shown them the chemical changes which took place in certain descriptions of stone, and in the case of the specimens of dilapidation exhibited this evening, it appeared that this destruction was going on while the restorations were in progress, so rapid was the decay in some instances.

WOOD SAWING AND SHAPING MACHINES.

AN invention has been patented by Mr. J. W. McCarter, of Londonderry, and is described with engravings in the *Engineer*. It comprises improvements applicable to machinery for sawing wood, and more or less to other wood-cutting machinery. Deal frames upon his plan are sawing thirty-two deals per hour, two being cut at the same time. The invention does not relate to the saws with their frames and guides. The first portion of the invention relates to an improved silent feed motion, the principal part of which is a disc fixed on a shaft driving the feed roller shafts. A second portion of the invention relates to improved rollers for carrying, moving, and guiding the wood through the machine, these rollers being so contrived as to dispense with the fence, side rollers, weights, and springs hitherto employed. —— Another invention, by Henry Wilson, of London, is described as consisting in the construction of machinery whereby wood is shaped, either one piece or several pieces at one time, to the form of a metal or other suitable hard template or guide by means of rotating cutters, which act upon the wood in the direction of the grain, whereby a smooth and even surface is obtained. These inventions cannot be fully described without the aid of the engravings.

THE COTTAGES AT HARTWELL AND STONE, BUCKS.

A CORRESPONDENT urges that our informant "was misled in regard to the proprietorship of some of these cottages; for, although the acreage of the two parishes does principally belong to Dr. Lee, many of the cottages in question do not. Even where there is a row of connected dwellings," he goes on to say, "only a portion of these belongs to Dr. Lee. The doctor maintains a large staff of bricklayers and carpenters, whose duty it is, under the direction of an inspector, to enlarge, reinstate, or repair both farm-premises and cottages."

We are very glad to find that Dr. Lee's friends repudiate for him the ownership of the dog-holes at Hartwell, and that we were misinformed in that respect. All we will say is, that the people thereabouts should also be set right in their knowledge; for it was not one informant, but half a dozen informants, who gave us the

proximate cause for this disease, when the premises are looked at the reason is evident. Except in those parts of the premises which the hair-dresser has put in order at his own expense, the place is miserably dilapidated; but bad as this is, the state of the drainage is far worse: from the untrapped closet passes an imperfect brick drain, which allows the poisonous gases to be distributed throughout the house.

ECONOMY OF FUEL IN STEAM ENGINES.

WE very much doubt whether the warning of Sir William Armstrong will have much indirect effect on the consumption of coal,—time alone will show. We hope, indeed, that the time is far distant when coals will be taken to Newcastle; but there can be little doubt that a good many of the coals yet at Newcastle might be saved. Prodigious quantities of what is in truth the heat, the light, the power of England, are being hourly converted into a gaseous form, and launched unconsumed into the vast airy ocean. Ceaselessly are heaps of fuel poured down the greedy throats of blast and other furnaces, boiler fires, and, not least, innumerable kitchen grates. There are, however, certain situations of, and uses for, the steam-engine, in which economy in the use of fuel is absolutely needed. A pretty large factory owner, for instance, with (say) 200-horse power on his premises, finds that economy of fuel, even where coal is cheap, means a large annual income. He knows that he cannot get an economical engine without some additional complication of its parts, but he also finds that the slight additional cost of repairs is more than counterbalanced by the coal bills. Not that factory owners, as a rule, are very economical in fuel. A tabulated statement now before us,—by the excellent Manchester Association for the Prevention of Boiler Explosions,—shows that the average consumption of fuel during the year 1860, in and about Manchester, was not much less than 7 lb. or 8 lb. per horse-power per hour. It appears to us that we may expect further improvements in the economical use of steam in those forms of the steam-engine in which it is either self-propelling or has to be carried about. Economy of fuel means economy of water; economy of fuel and water means a saving in steam and water space, and thus, as a further result, a saving in boiler-power, weight, and space. In no form of the self-propelling engine besides that of the marine engine is condensation admissible,—from the great quantity of water required for the operation. We are thus mainly thrown on the resources to be found in the use of high-pressures of steam, and of expanding these high-pressures down to the atmospheric limit. Of course there are other means of saving fuel,—such as a very careful combustion of the coal, heating the feed-water, super-heating the steam, and other plans. A thorough and careful expansion of the steam appears to us the most legitimate way of saving fuel. An only very partial expansion of the steam is carried out in the railway locomotive by means of the cap of the slide valve, and the expansion slide link;—it remains to be seen whether the conservative tendencies of locomotive engineering—enforced by the great need for simplicity on railways—will be overcome by some good mechanical arrangement. There is undoubtedly at present a great demand for economy of fuel in the portable and traction engines now used by building contractors, and by farmers for ploughing and thrashing. Here, again, comes into play what we may term the locomotive tendency towards economy of fuel. The cost of coal in ploughing is something like one-third of the expenses, and water and coal carrying make additional holes in the farmer's pocket. A great impediment to the general introduction of the traction engine lies in the absence of stations on common roads where it may take in its provisions of coal and fuel. A camel in the desert of Sahara, after having drunk up the water in what engineers would call its stomach tank, is not as helpless as our great monsters of traction engines far away, on a country road, from any supply of water or fuel. The economy of fuel in steam-engines is a vast subject, involving very many interesting problems in thermo-dynamics, requiring for their practical solution often very ingenious arrangements. For it may be laid down as an axiom that no economy of fuel can be got without some additions to the condensing steam-engine, some additional complication, if you like, and if the ordinary cylinder and piston, fed by a common slide valve, be accepted as the *beau idéal*, the *summum bonum*, the *ultima ratio* of engineers.

We have just examined what would appear to us a very efficient way of using steam.

At the New Foreign Office, now being erected by Messrs. Smith & Taylor, a portable engine is employed in working a set of stone-sawing frames. The engine appears at first sight like the ordinary 8-horse engine of the makers—Messrs. Hornsby & Sons, of Grantham. It will, however, be noticed that the cylinder is a little larger than twice the throw of the crank. It will be seen that the inventor aims at getting the advantages of a double-cylinder compound engine by means of one cylinder alone. This is, indeed, the leading idea of the construction of the engine, which is denominated "*a double-expansive single-cylinder steam engine*" by its inventor, Mr. E. E. Allen. A section of the cylinder shows that this long cylinder is divided in the centre, and on this division works a trunk, at either end of which is a light piston, held together by the piston rod,—in this case, a pistons' rod. Each of the two pistons works between the cylinder cover at the end and the division in the middle. There is thus a necessity for a separate slide-valve, and separate inlet and exhaust ports to each piston. On starting the engine, steam at the boiler pressure enters first the annular space through the steam port, and it may be cut off at 5-8ths of the stroke by means of the cap on the valve. The exhaust steam from the annular space having done its work therein, is fed through the D-slide valve into the other end of the cylinder on the whole surface of the piston, and is at last exhausted from thence by the ordinary means. The return stroke is effected in the same way with the other half of the double cylinder. It will thus have been seen that the expansion is in the ratio of the area of the annular space to that of the whole piston—besides that afforded in the annular space by the cap of the valve. The valves are packed at the back in order to take off the steam pressure. The inventor purposes to adapt his cylinders to any engine where this may be feasible,—in fact, to accomplish with the horizontal engine what was attempted with the beam engine, by the so-called MacNaught system. We have seen some excellent indicator diagrams of these engines. It is a very great pity that this engine was not publicly tried on the friction brake, at the Worcester Show of the Royal Agricultural Society. It would then have been in strict competition with these complicated and unpractical *tours de force* racing engines. Mr. Allen will have to wait till 1866, we believe, for the next trials of this kind. The engine at the Foreign-office is stated to consume less than half the fuel used by engines of the same class. Of course, this is no accurate comparison. The peculiarity generally adopted by the Messrs. Hornsby, of putting their engines inside the fire-box, will be in this instance, where expansion is carried so far, highly beneficial—perhaps for the first time. We have every hope that this engine will stand the searching test of practice. Of course, cavils could be raised against it; but we know too well the usual difficulty of introducing an improvement, to increase the difficulty in this case by anything we might utter. Success, and success alone, makes engines, as well as statesmen,—shall we also say engineers?

THE DECAY OF BUILDING STONES.

IN the discussion which took place on the reading of Dr. Voelcker's paper on "The Effect of Smoke in producing Decay in Building Stones,"

Mr. C. H. Smith said,—He had often been perfectly bewildered by the many scientific theories that had been propounded in reference to this subject. The paper had not alluded to the great variation in quality even in the same description of stone. As regarded Caen and Bath stones, they had been treated as being usually of one quality; whereas, it was well known that in every quarry of this stone there were four or five different varieties, as distinct from each other as possible; therefore it was not right to treat of it merely as Caen stone. The same might be said of Bath, Portland, and all the other oolitic stones. If it were left to the builder or mason, he would soon find out the softest in the quarry, for it could be worked with half the labour that was required for the harder kinds, besides making the finest looking work when it was finished; and it was owing to this often occurring that an almost incredibly rapid decay of the material took place. In every district of the Caen stone there were eight or ten different quarries, and each of these had five or six different beds, so that there were at least fifty varieties of Caen stone, all varying in some respects from each other, and many of them of an inferior character. The decay of the stone in building was, therefore, in a great measure, owing to the bad selection of the material in the first instance. He had seen many instances of this, both in London and the country. He could mention many public and other buildings in London and elsewhere, in which the decay of the stone had been almost as striking as in the case of the specimens on the table. The Roman Catholic Church of St. George was almost as bad as it could be. The structure had been built within the memory of most present, and yet the stone was in a complete state of decay. The materials used were Caen and Bath stone, but not of good quality; and it was, therefore, in his opinion, more important to be able to select the best qualities of stone, than simply to ascertain their chemical constituents. Generally speaking the stonemason could tell, almost at a glance, the good and bad qualities of stone; but it was often not his interest to say anything about it. To give an instance of good and bad qualities of stone of the same kind, he would mention Portland stone, which had been used in London a great deal since the time of James I. The Chapel Royal, in Whitehall, was one of the first large buildings erected of that material, and Sir Christopher Wren used it for all his churches. The Monument on Fish-street-hill and Temple Bar were both constructed nominally of the same stone, and while the bas-relief representing the Great Fire of London was as perfect as possible, without a bad stone in it, it was well known in what a state of decay the west front of Temple Bar was, with exactly the same aspect. The different states of preservation of the two buildings were entirely owing to the different qualities of the same description of stone. At Somerset House, again, there was another remarkable instance of this. The river front was built by two different masons, under the same architect. One built the upper part and the other the lower. The part below the terrace was as black as could be, and was at the same time remarkably perfect: the upper portion was almost white, and there was scarcely a good stone in it; yet both portions of the building were of the same aspect, and the portion nearest the water was perfect, while that which was farthest from the water was very much decayed. It was after the bad stone had been used that chemists were set to work to try and find out something to stop the decay of our large public buildings, whereas the better plan would have been to have taken more care in the selection of the stone. He believed several thousand pounds had been expended upon the Houses of Parliament in trying processes to prevent decay, but up to this time he was not aware of any plan that was practically useful. A specimen was put into his hands some time ago to show how far the indurating material employed in one of these processes had penetrated into the stone, and he found that it had entered as far as three quarters of an inch; but that stone had been in the first instance put into a hot-air chamber to drive out all the moisture, and afterwards immersed in the boiling fluid, and by that means this result had been produced; but he need hardly say that it was not possible to put the Houses of Parliament or Somerset House either into a hot-air chamber or into a boiling fluid. Those appliances answered in the laboratory, but not in practice. His own opinion was that any of the substances at present known applied to the preservation of stone would not be neutral in their effects: they would either tend to preserve it or to hasten its decay. 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atmosphere of which was impregnated with the acids, &c., to the effects of which the destruction of stone was attributed by scientific men. The town of Oxford presented a remarkable instance of this. He knew of no town in so deplorable a state in this respect; and he attributed it entirely to the injudicious selection of the quality of stone. The effects of varieties of temperature upon stone had not been sufficiently taken into account. The extreme difference in the temperature of winter and summer in this country might be stated at 100 degrees. That, in his opinion, had more effect in producing the decay of stone than anything else. Take the case of a building exposed to two different aspects, such as the Horse Guards, which was built throughout as nearly as possible with the same stone. The north and east sides of that building were blackened and in a perfect state, while the decay was principally observable upon the sides facing the south and the west; owing, as he believed, to the greater variations of temperature to which they were exposed. Dr. Voelcker had implied that limestones were unfit for outdoor carvings, and if so, he should be glad to know what sort of stone was suitable, because they could only carve at great expense in sandstone; and, moreover, it was more or less laminated, and, in order to be durable, required to be put up in the position in which it was laid in the quarry, otherwise it became exfoliated.

Mr. G. F. Wilson, F.R.S., thought that Dr. Voelcker had treated this subject in a strictly practical manner. When a scientific chemist in the position of Dr. Voelcker explained what the particular form of decay in the stone was, showing that so large a proportion as fifty per cent. of sulphate of lime was present, it must direct the attention of practical men to the importance of using those particular kinds of stone which were not so liable to be acted upon by the sulphate of ammonia in the sooty atmosphere. The remarks of Mr. Smith, as to choosing the best portions of stone in a particular quarry, were very important. Dr. Voelcker attributed the decay of particular kinds of stone to the corroding effect of the black smoke of large towns forming an incrustation which reacted on the stone, somewhat in the same way as tartar acted upon the teeth, only with a different chemical reaction. That subject had been treated of several times in this room, and the different modes of getting rid of the smoke which occasioned the evil had been considered. A very simple method of preventing smoke in house fires was stated to be the having a grate with a false bottom and putting the coals in below, and removing them when in a glowing state from the bottom to the top of the grate.

Dr. Bachhoffner remarked that, judging from what had fallen from his friend Mr. Smith, every architect should be a Hugh Miller: but he thought very few architects could give that time to the study of geology which was requisite to bring them up to the practical standard suggested by Mr. Smith, as judges of the different qualities of stone. Hence the advantage of this Society and of the admirable paper brought before them this evening. He had not heard anything in the remarks of Dr. Voelcker as to discarding of limestones, and he apprehended that their disuse for ornamental purposes was not suggested; but the novel point with him, and one which was of considerable importance, was the action of the sulphate of ammonia in the soot producing double decomposition, and thus contributing to the decay. He knew no reason why every household should not be made to consume its own smoke. Mr. Wilson had alluded to a plan which he (Dr. Bachhoffner) patented some years ago, but no one would take the trouble to employ it. It had been shown by Dr. Arnott and many others that the proper way of lighting a fire was from the top. Lighting from the bottom was a wasteful plan, for the heat distilled the coals at the top, and their heat-producing qualities were thus to a great extent lost. A fire lighted in the way he had just recommended would remain alight for four or five hours, and require no stirring. He thought Dr. Voelcker was quite right in saying that smoke was the cause of the destruction of stone in buildings, and he supposed they must submit to this till the legislature made it imperative that every house should consume its own smoke. The table in the paper showed them that whilst the original composition of stone contained only one-tenth per cent. of sulphate of lime, in the decayed stone fifty-one parts out of 100 were converted into this salt.

Mr. F. A. Abel remarked, that there was no doubt the facts brought before them in this paper formed an important contribution to our knowledge as to the various causes which brought about the decay of stone. Mr. Smith had properly called attention to the importance of selecting proper descriptions of stone, of uniform quality, in future buildings; but it must be remembered that we had to deal with buildings already erected. With regard to the effects of moisture and of the different salts contained in soot, they were deserving of great consideration. Those who had given attention to the decay of stone would have noticed, that where the stones remained moist, as they would in some parts of a building, there the decay was greatest. This was not alone owing to the disintegrating action of the moisture, but was due, in a great measure, to the absorption of the saline materials which constituted so large a proportion of the composition of soot. On one point he differed from Dr. Voelcker—that was, as to the preservation of stone by artificial means. He had led them to believe that such a process as Mr. Ransome's would be successful. In that he (Mr. Abel) did not agree. In the composition used by that gentlemen there were different salts, which, by chemical reaction, were intended to deposit an insoluble substance upon the surface and within the pores of the stone. Doubtless this insoluble substance, silicate of lime, was produced; but there was also produced a soluble substance,—common salt,—which soon dissolved away, and left the pores of the stone open. The result was, the stone was not permanently protected; indeed, not more effectually than if some such substance as beeswax were applied, which for a time would fill up the pores of the stone, but would soon decay and require renewal. If they could discover a process (and he did not despair of this) by which they could get a preservative matter into the pores in a perfectly insoluble form, it would no doubt be valuable. To that end they were tending. He believed it was not impossible to deposit silica in a hard form in the pores of the stone without also depositing a soluble salt, and in this way they would effect what Dr. Voelcker had shown to be so desirable to prevent the decay of stone.

Mr. Bishop could state that what had been treated of as occurring to buildings in this country, took place to a considerable extent in other parts of the world, under totally different climatic influences. The English church at Alexandria, although erected only six or seven years ago, in sandstone, already exhibited signs of decay in some parts, particularly in the ornamental portions; whilst the mosques in Cairo, which had been built hundreds of years, also of sandstone, were in the most perfect preservation, and the richly-ornamented domes of those buildings, exceeding anything we have in this country, remained perfectly sound. Damp had been spoken of as having a great effect upon some description of stones. In Alexandria, however, there was no rain whatever for eight months in the year, but there was a palpable dampness in the atmosphere of an evening. He had no doubt the stones took up a great portion of that dampness. On visiting the obelisk at Heliopolis, on the sides on which the current of wind set, there was an incrustation nearly half an inch thick, with slight vegetation upon it. That appearance was presented on only two sides of the obelisk, and there must be some considerable degree of moisture to fix that earthy matter. A similar appearence was presented by the stones all over Egypt: there was something deposited on them which would produce vegetation if there were sufficient moisture for that purpose. With regard to the destructive influences of frost upon stone, they were, no doubt, considerable, though in many places in the East, where there was no frost, the stone was, nevertheless, much decayed. The Colosseum at Rome, though built of a very porous stone, was in excellent preservation. The Cathedral of St. Peter was built of the same kind of stone, as were most of the buildings in Italy which were not of marble. It was very porous, though also very durable. The Cathedral of Cologne appeared to have suffered from the decay of the stone more than any similar building in this part of Europe, and many portions had to be entirely rebuilt. With regard to Caen stone, as far as his own knowledge went, it appeared that those stones which contained the greatest portion of silica were the best resistants of the influences of the weather.

The Chairman (Mr. Hawes) proposed that the thanks of the meeting be given to Dr. Voelcker for his paper. This paper was of a highly practical character, containing, as it did, a collection of chemical results obtained by experiment upon decayed stones taken from various buildings. It was true that no remedy had been suggested in the paper, but perhaps that was not the object, but rather that of eliciting discussion and information. This was the kind of paper most likely to bring out that information, either as to what stone should be avoided, or how to make the material employed more durable. Mr. Smith had given them another set of facts, those of his experience as to the differences between one bed of stone and another. He had also shown how, in the same building, different degrees of disintegration in the same description of stone had taken place. Taking the instance of Somerset House, he had stated that the lower parts and those nearest to the water had suffered less than the higher portions of the building. Then, with respect to the Horse Guards, Mr. Smith had told them that the northern and eastern portions were less decayed than the southern and western, and this he attributed to the greater change of temperature to which the latter were exposed, but it must be remembered that these were also exposed to the winds most prevalent in this country; therefore, the condition of the stone being originally the same, we must infer that the sides of the building exposed to the winds and rains nine months out of the twelve would be mechanically acted upon to a greater extent than the other parts, and there would also be a larger quantity of sulphur salts thrown upon those portions. These causes combined, no doubt produced that difference which Mr. Smith had very truly stated. Here were the observations of a practical man pointing out where the decay took place, but he did not show them how the evil was to be avoided. Dr. Voelcker had shown them the chemical changes which took place in certain descriptions of stone, and in the case of the specimens of dilapidation exhibited this evening, it appeared that this destruction was going on while the restorations were in progress, so rapid was the decay in some instances.

WOOD SAWING AND SHAPING MACHINES.

AN invention has been patented by Mr. J. W. McCarter, of Londonderry, and is described with engravings in the *Engineer*. It comprises improvements applicable to machinery for sawing wood, and more or less to other wood-cutting machinery. Deal frames upon his plan are sawing thirty-two deals per hour, two being cut at the same time. The invention does not relate to the saws with their frames and guides. The first portion of the invention relates to an improved silent feed motion, the principal part of which is a disc fixed on a shaft driving the feed roller shafts. A second portion of the invention relates to improved rollers for carrying, moving, and guiding the wood through the machine, these rollers being so contrived as to dispense with the fence, side rollers, weights, and springs hitherto employed. —— Another invention, by Henry Wilson, of London, is described as consisting in the construction of machinery whereby wood is shaped, either one piece or several pieces at one time, to the form of a metal or other suitable hard template or guide by means of rotating cutters, which act upon the wood in the direction of the grain, whereby a smooth and even surface is obtained. These inventions cannot be fully described without the aid of the engravings.

THE COTTAGES AT HARTWELL AND STONE, BUCKS.

A CORRESPONDENT urges that our informant "was misled in regard to the proprietorship of some of these cottages; for, although the acreage of the two parishes does principally belong to Dr. Lee, many of the cottages in question do not. Even where there is a row of connected dwellings," he goes on to say, "only a portion of these belongs to Dr. Lee. The doctor maintains a large staff of bricklayers and carpenters, whose duty it is, under the direction of an inspector, to enlarge, reinstate, or repair both farm-premises and cottages."

We are very glad to find that Dr. Lee's friends repudiate for him the ownership of the dog-holes at Hartwell, and that we were misinformed in that respect. All we will say is, that the people thereabouts should also be set right in their knowledge; for it was not one informant, but half a dozen informants, who gave us the

MONUMENT IN MEMORY OF CANON M'CARTHY, MALLOW, CORK.——MR. J. J. M'CARTHY, ARCHITECT.

statement in question. The condition of these "homes" of our labouring population no one defends: our sketches put that out of the question; and others that we shall probably give soon will further confirm all that has been said. It is to be hoped the real owners will see the necessity of attempting some immediate improvement.

THE M'CARTHY MONUMENT, MALLOW.

THE monument recently erected in the parish church of Mallow, county Cork, in memory of the late Very Rev. Justin Canon M'Carthy, is composed principally of Caen stone, inlaid with spars and marbles of various colours. The effigy, which is life-size, is of alabaster; and the cresting of roof of wrought-iron, gilt. The total height of the monument is 11 feet. The entire work has been executed by the Messrs. Hardman, of Dublin, from designs by Mr. J. J. M'Carthy, R.H.A., architect, at a cost of 165*l*.

FRAMLINGHAM COLLEGE.

PRINCE CONSORT MEMORIAL FOR SUFFOLK.

IN February, 1862, the country was full of the idea of memorials of the Prince Consort. On the one hand, the Central Committee wished to gather into one all the contributions for a great national object: on the other hand, each particular county and province, eager as the central body to perpetuate the memory and example of so great and good a man, was nevertheless desirous to see on its own soil the particular monument which might be erected.

In Suffolk, the idea of a cheap and good education for the sons of the middle classes soon gained ground. A county meeting was called, and 6,000*l*. subscribed on the spot. The Lord Lieutenant, who is identified with every movement for the good of the county, lent the weight of his influence, and the nobility and gentry rallied round him, and the list soon swelled to larger proportions; but a crowning feature was to be contributed by Sir Edward Kerrison. Belonging to Pembroke College, Cambridge, there lie at Framlingham and elsewhere sundry estates willed in the old times for educational purposes. After lengthy conferences with the Fellows of Pembroke, who were willing enough to devote a part of the disposable property for the benefit of those for whom it was intended, when only the method was decided, Sir Edward succeeded in gaining a plot of land for the site, and a Bill was passed in Parliament, at the instance of the Charity Commissioners, empowering the grant of fifteen acres of land as a site for the Middle Class School.

The subscriptions now amount to more than 13,000*l*., in addition to other benefactions; and Suffolk promises to provide for her less favoured sons a preparation for the very highest position for which they may be fitted by their genius or acquirements. To illustrate the spirit with which the movement has been inaugurated, the following have contributed 500*l*. each:—Lord

FRAMLINGHAM COLLEGE, SUFFOLK.—THE PRINCE CONSORT MEMORIAL.—MR. FREDERICK PECK, ARCHITECT.

Stradbroke (lord lieutenant), patron; Sir Edward Kerrison, president; Sir Fitzroy Kelly, M.P.; Lord Henniker, M.P.; Sir George Broke Middleton; the Marquis of Bristol; Sir Charles Bunbury; Mr. T. Lucas, Lowestoft; Mr. K. Wilson; Mr. R. Garrett, Leiston; Mr. J. Berners; Mr. W. G. Mantle, Leicester-square. Mr. Goldsmith, Parliament-street, gives 700*l*. Many other large subscriptions swell the sum total to the above-mentioned amount.

The committee have laboured continuously to bring the undertaking into shape, and the building, of which we give a view, is in course of erection at Framlingham. The edifice is designed in the Gothic style, of a collegiate character, grouped together in such a manner as to give diversity to the general outline, and is of considerable extent, covering an area of 240 feet by 230 feet; containing accommodation for head master, four under-masters, officials, and 300 boys.

The general elevation presents a central block of building, with clock tower, and in this portion of the building it is intended to denote the memorial character of the edifice, by erecting a statue of the Prince Consort, in a canopied niche over the entrance doorway. On each side of the central building the college extends about 120 feet, being three stories in height, and forming the residences of the boys and under-masters. At the west end of the college is placed the head master's residence, and it is proposed to erect at the opposite end a chapel for the use of the students. The upper and lower schools are in the rear at each end of the building, and are of similar elevation as the front of the college. A library, lecture-room, and class-rooms, are provided for each of the schools. At the back of the central building is the dining-hall, capable of accommodating 500 boys. Near the dining-hall are placed the kitchen, matron's and domestic offices, and, separate and distinct, an infirmary for sick boys.

The building is a red brick structure, and crowns the summit of a hill: it has already reached the first story. It looks down upon rich pastures, ending in a small flat tract, the remains of the ancient moat; and on the opposite slope is perceived the quiet old town, the most fitting in every respect for an educational centre, being connected by rail with every part of the county, surrounded with classic reminiscences, and said to be eminently healthy.

It is also free from the disadvantages of a large population. The chief attraction in the landscape, however, is the extensive circle of walled fortifications, comprising the remains of the old castle.

The committee anticipate that the progress now being made will enable them to open the buildings about the Midsummer period of this year. The architect, under whom the works are placed, is Mr. Frederick Peck. The contractor is Mr. Lacey, of Norwich. The cost of the building, exclusive of chapel, will be about 13,000*l*.

It is gratifying to observe that not only residents in the county, from the Lord Lieutenant to the farmer, are heartily supporting the movement; but even natives of Suffolk, whose fortunes have been made elsewhere, still take a pride in the county which gave them birth, and are reckoned among the largest contributors.

THE ARCHITECTURAL ASSOCIATION.

THE ordinary meeting of members was held on Friday, the 22nd inst., Mr. T. Roger Smith in the chair.

The following gentlemen were, on ballot, elected members of the Association: Mr. Thomas Bailey, Mr. Thomas Wisedale, and Mr. F. H. Dancaster.

Mr. J. D. Mathews (hon. secretary), in announcing donations to the library, called attention to the advantages which it offered to the students of architecture, and observed that it was the only lending library of the kind in the metropolis, and as such was entitled to the support of the profession.

The Chairman concurred with Mr. Mathews, and expressed a hope that, should any member of the Architectural Association be so fortunate as to obtain the Society of Arts' prize for the best design for a labourer's cottage, he would testify his gratitude by a liberal donation to the library.

Mr. Penrose then read a paper on Greek architecture, which will be found in another place.

At the conclusion,

Mr. Penrose stated, in reply to questions from Mr. Spiers, Mr. Blashill, Mr. Ridge, and other members, that the general impression was that the Parthenon (of which a coloured diagram, executed by the late Professor Cockerell, was exhibited) was coloured when it was originally built, and not at a later period when the Romans had ascendancy in Greece. There was no trace remaining of gilding in the Parthenon, but in the annals of the Erectheum records were still preserved to prove that gilding had been used in the ornamentation of the building. With regard to the roofs of Greek temples, there were places which seemed to have received scantlings of timber. It was believed that marble tiles were placed over the timbers, and that the rain-water was allowed to drip off. No cement was used in the pillars of the Parthenon, but the blocks of stone seemed to have been rubbed or ground down very fine, so as to make them fit exactly when set upright. There were also traces of iron and bronze cramps, but many of the latter had been stolen. He had not been able to discover any traces of masons' marks, so often found in ancient buildings in England and elsewhere.

Mr. Spiers having proposed a vote of thanks to Mr. Penrose,

Mr. Blashill, in seconding it, expressed his gratification at finding that Greek art had been popularized of late; and recommended all who desired to know more about the subject to attend Professor Donaldson's lectures at the London University.

The Chairman having put the motion, which was carried, said the Athenians at one time appeared to have reached perfection in architecture, sculpture, and literature. We could not hope to rival them in an age like this, when beauty in architecture was too often sacrificed to utility; but we might improve ourselves, and make our architecture more grateful to the eye by studying nature in landscape and in the human figure. He looked forward to a revival of architecture by the harmonious action of architects in favour of a general style and general progress. The works of Mr. Cockerell were amongst those which could always be studied with advantage, and he hoped the members of the Association would profit by them.

The Chairman then announced that as Mr. T. Hayter Lewis would be unable to read his promised paper on the 5th of February, on "French Architecture down to the Renaissance," Mr. Bunker had promised to read a paper on "The System of Measuring and Valuing in the Metropolis." The paper by Mr. T. Hayter Lewis would be read on the 1st of April, in lieu of that promised by Mr. Molecey, who was about to leave the country.

It was also announced that the subject for the next class of design would be "a library."

MANSFIELD STONE.

AT a recent *soirée* of the Mansfield Mechanics' Institution, held in the townhall, and presided over by the Speaker of the House of Commons, Sir Roderick Murchison, in the course of an address, drew attention to the structure of the county of Nottingham, and of the stone of the neighbourhood. He had before him maps prepared by the Geological Survey of the British Isles. That survey, of which he was the unworthy director, had in their possession maps so constructed as to represent all the younger formations and all the older formations which existed in the British Isles, and any person so disposed might obtain copies of them at a small price. With regard to that particular town (Mansfield), it rested upon a rock which was singularly interesting to himself, as he had occupied a very large portion of his life with the development of those organic remains which succeed each other in the crust of the globe. Mansfield stood upon the very highest of these formations, and next under it was the great carboniferous formation which was important to that district, inasmuch as it contained the only great mass of coal, and was superior to all other, or any other, of the younger deposits. The formation on which Mansfield stands, to which he had given the name of Permian, was of enormous importance to this county. It was so because it overlaid that great pabulum—it was the great feeder of the industry of our country; it was the great coal deposit of England. The question also was: to what depth could they find coal beneath the magnesian limestone? He gave the name of "Perm" to it for this reason:—Whilst travelling through the vast expanse of Russia, he there found, in the government of Perm and other vast regions of that kingdom—regions as extensive as the territory of France proper,—this deposit of which the limestone of Mansfield is the centre. This Mansfield limestone was of great, nay, of universal, importance in the structure of the globe. It contained the same organic remains in Russia that it did here, only in Russia it was disseminated in very small bands. Still it contained the same organic remains as those which are found in this country, and was surmounted, as well as underlaid, by great masses of red sandstone.

In this country, on the other hand, whilst the limestone was predominant, those great masses of overlying sandstone did not exist,—the deposit which overlies our limestone belonging to another age. The new red sandstone of Sherwood Forest, which immediately succeeds from Newstead Abbey, immediately to the east of Mansfield,—this Permian group or system was of immense importance when we considered the singular value which it possessed within itself, as being one of the finest building stones to be found within the British isles. Knowing how great was its value in this respect, he very much regretted that, when a scientific friend advisedly, and with great talent, recommended that this magnesian limestone should be used in the construction of the Houses of Parliament, the Mansfield stone was not selected in preference to that which was used. If the Mansfield stone had been selected, not one pinnacle in that otherwise grand building would have been subject, as it now was, to perish; not one of those sandy, yellow, incoherent beds, would have been selected by the contractors; or rather, he should say, that they were only too anxious to meet the wishes of the architect-in-chief, in getting large masses of stone, whatever might be their quality. Here he would tell them an anecdote, relating to his friend who recommended the Anston stone for building. His audience were aware that there were various qualities of the Anston stone. Well, there was an officer appointed, at a very small salary,—a person well calculated to select the stones which were only proper for the construction of our great Houses of Parliament; but, by one of those miserable pieces of economy which from time to time take place, this officer, whose duty it was to mark and send back such stones as were unfit for the purpose, was paid off, and the consequence had been,—he would say it in the presence of the Speaker of the House of Commons,—great deterioration in the structure of the Houses of Parliament.

THE "METROPOLITAN DISTRICT RAILWAY" BILL.

THE preamble recites—

"That the streets of the metropolis are inadequate to the wants of the vast and increasing population which now frequents them, and they are further encumbered by the passage through them of goods and minerals between railways having terminal stations in the metropolis, and it has become indispensable that they should be relieved of portions of that traffic, partly by the construction of railways within London, and partly by the construction of railways around the metropolis, which shall unite the railways having termini in London, and thus become a channel for the conveyance of goods and of minerals from one railway to another, and especially from those lying on the north to those on the south side of the Thames."

The project is set forth as a main outer circle, a main inner circle, and a series of branches connecting the outer circle with the following systems:—West London Extension; West End of London and Crystal Palace, Hammersmith and City; Great Western; London and North Western; Midland; Hampstead and City; Great Northern; Great Eastern; North London; Blackwall; Brighton; South Eastern.

The "inner circle" is to commence at the proposed extension of the Metropolitan and Brompton, and to pass by Westminster Bridge and along the north bank of the Thames to join another proposed extension of the Metropolitan near Fenchurch-street, thus completing a circle of railway in London which will communicate with, or be in close proximity to, all the stations in London north of the Thames.

The "outer circle" is to commence on the south side of the Thames by a junction with the Chatham and Dover, in the parish of Clapham, passing across the Thames between Chelsea and Battersea bridges, connecting itself with the main inner circle at Brompton; thence passing through Kensington, Kilburn, Kentish Town, Stoke Newington, Clapton, Hackney, and Bow; and ultimately from Bow across the Thames at

Rotherhithe, to join the South Eastern near New Cross.

It is provided in regard to that part of the outer circle which will lie between the Great Eastern at Bow and the South-Eastern at Newcross, that the construction of a bridge across the Thames at Rotherhithe, below London Bridge, should be deferred until the execution of the other portions of the undertaking shall have insured that the ultimate object of connecting all the railways around London will be attained. In order, also, to complete the system of intercommunication which is intended to be formed between the different railways, it is declared expedient that powers should be given to use short portions of the Brighton, of the London, Chatham, and Dover, and of the West London.

The capital is estimated at 10,000,000*l.*, whereof 4,000,000*l.* are to be borrowed.

The first members of the board are the Earl of Devon, and Messrs. Samuel Laing, George Worms, jun., Alderman Dakin, W. A. Wilkinson, W. Lee, W. Austin, Hon. F. Lygon. The works to be proceeded with are to be completed within seven years. The tolls for the inner circle are 6d. first-class, 4d. second, and 3d. third. Small parcels from 2d. to 3d.; exceeding 28 lb., 6d.; exceeding 56 lb., such a sum as the company may think fit. The tolls on the outer circle are to be 2d. per mile, and regulations as to the conveyance of cattle, coal, iron, and other merchandise are minutely described. The maximum rate of fares for passengers is fixed at 3d. per mile first-class; 2d., second; and 1½d., third. The company is not to be compelled to carry manure on the inner circle.

RESTORING STATUES AT LINCOLN.

THE newspapers say, the reparation of the Cathedral at Lincoln is being steadily proceeded with, by Messrs. W. & J. Sandall, under the direction of Mr. C. Ward, architect. The eleven figures of early English kings will be thoroughly restored. "A portion of the Norman work at the sides of the entrance is very much decayed, and this also will be restored, the new work already executed consisting of grotesque heads and angular tooling." This sounds very alarming. We offer no objection, in the absence, at present, of precise information; simply a caution to those who are concerned.

THE ARTISTIC SOCIETY OF PAU, FRANCE.

THE president of the Society "*des Amis des Arts*," of Pau, asks us to make known to English artists that their exhibition will open on the 15th of March next, and that they would gladly receive works of art from England. We willingly do this. Pau is occupied during the winter by many English families, who would be pleased to see works of their countrymen in the exhibition. Purchases are made by subscription, and allotted as prizes. Some copies of the programme will be found at our office, 1, York-street, should any English artists feel disposed to forward works to Pau.

SANITARY STATE OF MARYLEBONE.

FROM the monthly report on the health and climate of St. Marylebone during December, 1863, by R. D. Thomson, M.D., F.R.S., medical officer of health for the parish, printed by order of the Vestry, it appears that the health of the district has been more favourable than in the preceding month, since 356 deaths are recorded in the *five* weeks of December, and 305 in the *four* weeks of November. There were twenty-four fever cases in the past month contrasted with twenty-one in the four weeks of November. The disease, however, continues the report, "is increasing in the eastern districts of the metropolis; and it is necessary to be prepared to provide for the isolation of the sick in such a contagious complaint, should it make its way among our own population during the severity of the winter. From the total want of sufficient means of isolating epidemic and contagious diseases in the public hospitals, and from the increasing density of the population of the metropolis,—the most frequent cause of the spread of contagious disease,—the local authorities must, in future, make up their minds to provide for a certain number of sick during the prevalence of infectious zymotic disease. It is to be hoped that the larger and more wealthier hospitals will see fit to provide distinct isolated wards for contagious disease, as is universally the case in country infirmaries. If this desideratum be not supplied, these institutions will, in a great degree, be superseded by parish infirmaries and dispensaries."

THE NEW WORKHOUSE AT CARLISLE.

THOUGH not altogether completed, this workhouse has been opened to the public for inspection. The building is in the Italian style of architecture, of red brick with white stone facings. Above the main entrance, and between two lofty ornamental turrets, is the clock with transparent dial. The first apartments on the right and left are the master's office and parlour, and at this point the house is equally divided for males and females by a passage running through to the dining-room, which is 70 feet by 30 feet, and will also be used as a chapel. Throughout the whole length of the building, on each story, runs a long corridor 250 feet in length. From these corridors the various departments branch off. The right half of the building will be devoted to the females, and the left to the males; and on both sides the arrangements are uniform from bottom to top. The infirmary adjoining the house is a large building in the same style as the main building. The architects are Messrs. Lockwood & Mawson, of Bradford. The following were the tenders for the work, selected from fifty-nine sent in:—Messrs. Armstrong, excavating, brick-work, and masonry, 5,407*l.*; Court, joiner, 3,111*l.*; Irving & Lowthian, plumbers, 690*l.*; Johnston, plasterers, 618*l.*; D. Clarke, ironfounder, 429*l.*; Hill & Sutcliffe, slaters, 681*l.* 10s.; W. Stephenson, painter, 259*l.*; making a total of 11,195*l.* 15s. The glazing was done by Messrs. Slee & Morgan. The architect's estimate was about 12,000*l.* The total cost of the land and building together will amount to 12,715*l.* 7s., to be paid off in twenty-one years, and involving a rate of 1½d. per pound per annum.

LONDON FIRES DURING THE PAST YEAR.

THE annual report of the superintendent of the London Fire-Engine Establishment deserves attention. In the year 1863 the number of alarms given at the various stations of the metropolis alone was 1,624. Of these 81 were false, 139 proved to be only chimney alarms, and 1,404 were fires; of which 39 resulted in the total destruction of buildings, &c.; 310 in serious damage; and 1,055 in slight damage. The fires of 1863 show an increase, compared with those of 1862, of 101; and compared with the average of the previous thirty years, the increase is 582. This is an enormous increase, which is not to be accounted for by the increase of population and buildings. The report, however, shows that in the management of fires there is an improvement. The totally-destroyed list, 39, compared with that of 1862, shows an increase in number of six; but compared with reference to the average population of the thirty previous years, there is a decrease of nine. The amount of total destruction will, we hope, decline, as the facilities for telegraphic communication are in more complete working order between the various districts and the fire brigade stations, and through the general introduction of the steam fire-engines: but the figures which follow show that a considerable portion is caused by the distance between the suburban districts and the stations; for of the buildings destroyed, 4 were over 2 miles from the nearest station, 7 over 3 miles, 1 over 5, 2 over 6, 2 over 7, 1 over 8, 1 over 11, and 1 over 12 miles; 3 were lost from want of water, and 1 fell down before the fire was extinguished. We thus learn that a great part of the thorough mischief is done at a distance of about 3 miles from the stations at present established.

Of the 39 totally burnt-out buildings, 18 were completely alight, and 17 others burnt down, before the arrival of the engines. It is said that the telegraphic communication between the chief station and the outlying ones,—a plan which we recommended years ago,—has been completed; and now we urge, not only the erection of fresh stations, but telegraphic communication in case of fire throughout the part where the total burning is the most rife.

Than the men and officers of the Metropolitan Fire Brigade, there is no class who with so much energy and so much risk devote themselves to their important duty. They have also to contend against damp, and at all hours with the changes of temperature. In 1863 the list of casualties to firemen was less than in the previous year. There have been eighty-six cases of illness, totally incapacitating the men from duty, against ninety-eight cases for the year 1862; but although less in number, more severe in character. Of the total number, thirty-three have arisen from accident, and several are of a very severe form, demonstrating the hazardous nature of their employment. Respecting these men, who are not very well remunerated, and who, in consequence of the risk, would find difficulty in insuring their lives or providing against sickness, Superintendent Shaw says, "At the close of another year it has become my pleasing duty to bear testimony to the general efficiency and excellent conduct of all ranks of the establishment, and to state my most sincere belief that the steadiness, unanimity, fearlessness, and zeal, with which they devote themselves to the arduous duties of their profession, fully entitle them to that confidence and liberality of which they receive such numerous instances at your hands."

The figures, in connexion with other large cities are worth note, although the accounts of some of those abroad may not be quite exact. Average per annum:—Philadelphia, 363; New York, 331; Paris, 300; Berlin, 260; Hamburg, 244; St. Louis, 189; Boston, 172; St. Petersburg, 140; Montreal, 104; Brooklyn, 83; Troy, 42; Charleston, 31; Liverpool, 297; Manchester, 238; Glasgow, 221; Dublin, 174; Birmingham, 127; Sheffield, 51; Leeds, 47; Hull, 26; Bristol, 25; Cork, 23; Sunderland, 22; Belfast, 17; Birkenhead, 8; York, 11; Exeter, 10; Waterford, 5; Yarmouth, 4; Tynemouth, 3; and in London, as we have above recorded, 1,404.

Hodges's Fire Brigade.—An elaborate report has just been published, containing statistics as to the number and character of fires which have been, as usefully as disinterestedly, attended by the fire brigade maintained at the expense of Mr. Hodges, the distiller, of Lambeth; from which it would appear that the public are greatly indebted to that gentleman and the men under his command. During the past year the total number of fires attended was 108; whilst in 1862 they only amounted to sixty. Of the former, eighty-four took place on the south, and twenty-four on the north side of the Thames. Two steam fire-engines, the "Torrent" and the "Deluge," have been added to the plant of Mr. Hodges's fire establishment, and have proved very effective. 2,200 feet of hose, and other appliances, are kept in thorough repair, and in readiness at a minute's notice. He has also purchased from Mr. Salt, of Saltaire, a steam road locomotive, called the "Fly-by-night," which runs at the rate of 12 to 20 miles an hour, according to circumstances, and is worked by two men, and capable of carrying twenty persons. Notwithstanding the useful services which Mr. Hodges and his fire brigade appear to render to the metropolitan public, it is to be regretted (as a correspondence published in conjunction with his report intimates) that he has grounds of complaint of want of courtesy, as well as obstruction received at the hands of the authorities and *employés* of the London Fire Brigade, at a time when the most determined energy and unity of action are necessary to prevent the destruction of valuable life or property.

ANOTHER NOTE ON THE ANCIENT WELL AT CLERKENWELL.

FROM time to time we have adverted to the desirability of preserving one of the most interesting old London landmarks,—a spot from which a parish containing a population of 65,681 persons has taken its name. The importance, in days long gone by, of this ancient site, has been more than once referred to in our pages; but, without now repeating the details, it may be mentioned that notices of the site of this well fill many pages of old London history: kings and queens have come here in pomp, attended by courtiers, who little thought of underground or other railways passing close by; and by whom even stage coaches and stage waggons would have been looked upon as fabulous things if suggested to them.

Wishing anxiously for the preservation of the historical sites of old London, we keep striving to force those who are in duty bound to do so, to restore those landmarks which are in danger of being forgotten or of perishing by decay, but especially to cause those who have wilfully neglected or misappropriated such relics, to bring

back what has been wrongly removed, or to restore those memorials which have been wrongly allowed to go by neglect and to decay.

In furtherance of these intentions we quote from one of an interesting series of papers on the Clerkenwell charities in the *Clerkenwell News*. It is clear, as we have said before, that the Marquis of Northampton *left by gift* to the poor of Clerkenwell, in 1674, Clerk's Well in Ray-street, &c., at a peppercorn rent; also a small room at the back of the pump, let to a Mr. Giles at 2*l*. 12*s*. per annum.

"The following extract from the vestry minutes of 1674 shows the means by which the parish became possessed of the well in Ray-street, and the purposes for which it was given, together with the manner in which it was afterwards disposed of by the vestry:—

'It was unanimously ordered by the ancient inhabitants of the parish met in this vestry (Dec., 1674)—That whereas the Right Hon. James, Earl of Northampton, hath given a certain spring of water for the use of the poor of the said parish of St. James, Clerkenwell, during his lordship's pleasure; and whereas the parishioners have thought fit to let out the said spring of water for the benefit of the poor of this parish to such person or persons who will give the most or greatest rent, or annuity, or income, for the same; and whereas John Crosse, of this parish, brewer, hath offered to give a greater rent than any other person, out of charity and goodwill to the poor of the said parish; we, whose names are hereunto subscribed, have therefore thought fit to order that the present churchwardens do let a lease for twenty-one years of the said spring of water to the said John Crosse, for the rent of 40*s*., one moiety whereof to be paid at Midsummer, the next moiety at Christmas following, and so yearly to the churchwardens for the time being, during the term, for the use of the poor.'

Mr. Pascall says,—'I am here induced to remark that, after the free gift of the spring by the earl to the use of the poor, it was not very generous on the part of the vestry to take it from them and let the same on a lease for twenty-one years for the sake of getting forty shillings a year, of which most probably the poor never had a farthing.'"

We still hope that the vestry will move for the return of the memorial which stood upon the site of the well. It is undoubtedly the property of the parish, and of much public interest; and it is stated that this record of the ancient well is in the possession of a member of the vestry of Clerkenwell.

HOLBORN VALLEY.

AT the last meeting of the Court of Common Council, a petition was presented by Mr. F. Marrable, architect, praying that his letter to the members of the corporation on the subject of the premiated designs for the improvement of Holborn valley might be taken into consideration. The petitioner, it appears, considers himself aggrieved by the decision to which the committee intrusted with the examination of the several plans arrived, and which he believed was unduly influenced by the engineer consulted by them. The petitioner therefore prayed that the plan of Mr. Bell, to whom the first prize of 250*l*. was awarded, and that of Mr. Sorby, who received the second prize of 150*l*., might be submitted to the scrutiny and judgment of some professional man or men of the highest eminence, free from any predetermined view on the subject, and who would be able to decide without prejudice or bias whether these designs were in accordance with the conditions of the competition expressed and implied as regards the accuracy of the estimates and the practical working of the gradients and levels, and which of the designs, including his own, was best calculated to meet the public convenience.

In the course of the discussion that followed it was stated that Mr. Haywood had received 1,000*l*. for his services in going over the competition designs and for the preparation of plans to be deposited in Parliament.

The petition was ultimately rejected by a large majority.

COMPETITIONS.

Public Cemetery for Manchester.—From the fourteen sets of designs received in answer to public advertisement, the three premiums which had been offered for plans for laying out and draining the land, and designs for the chapels, entrance-gates, and other buildings required for the proposed public cemetery, have been awarded to the designs sent in under the following monogram and mottoes, viz.:—"Trefoil in an Octagon," 100*l*.; "Père la Chaise," second, 40*l*.; and "Hoc Signo," the third, 20*l*. The sealed envelopes relating to such plans were, subsequently to such decision, opened; when it appeared that the plans obtaining the first premium had been sent in by Messrs. Paull & Ayliffe, architects, India-buildings, Cross-street, in conjunction with Mr. William Gay, landscape gardener, Bradford. The plans obtaining the second premium were by Mr. Henry Littler, 1, Albion-place, Higher Broughton; and those obtaining the third premium were by Messrs. Lucy & Littler, of 9, James-street, Liverpool.

PROVINCIAL NEWS.

Bristol.—The Government, in reply to a memorial signed by upwards of seven hundred of the principal merchants, bankers, and others, have consented to erect a new post-office, money-order office, and savings bank, for this city, at a cost of 10,000*l*., provided the citizens will contribute the sum of 2,000*l*. towards such outlay, subscriptions having been made by other cities and towns where new post-offices have been erected.

York.—The Inspector of Prisons who visits York has intimated that a communication will shortly be received from Sir G. Grey, the Home Secretary, requesting various alterations and improvements to be made in the House of Correction. These alterations will have principally for their object the adoption of the silent system; and the estimated cost, according to the *Intelligencer*, is about 3,000*l*. This expense, if incurred, will be defrayed by the ratepayers of York. In case the requirements made are not fulfilled, the inspector threatens that the prison will have to be closed.

ARCHITECTURE AS A FINE ART.

WHEN we fail in any undertaking whatever, we do not usually content ourselves with mere endless repetitions of the attempt. But if after very great changes in the conditions we still fail, the suspicion will creep in that our whole process is faulty. Possibly we begin wrong, and so cannot possibly succeed. We and our neighbours have copied the Classic, Gothic, &c., and now are completely at sea, without any style at all: see Mr. Fergusson.

The usual practice seems to be to design an *outside* first, and then to squeeze an inside into it. Thus the inside is often sacrificed to the out. As such a proceeding produces no good result, let us reverse this process, and in all cases design the *inside* first. Modern wants would then by degrees mould or form a style. The true architect would be he who succeeded in making an internal want sightly. In his lecture on this subject, Professor Smirke approves of the judicious use of "accident" in producing the picturesque; but no internal want ought to be talked of as accidental. The architect is called on to provide for those wants,—if possible with beauty, but on no account to stunt them like a clumsy shoemaker.

R. T.

Athenæum.

THE COMMITTEE OF THE ROYAL HOSPITAL FOR INCURABLES.

TREATMENT OF ARCHITECTS.

SIR,—Nearly three years ago the Board of the Royal Hospital for Incurables applied to some half-dozen architects and myself to send them designs in competition for their new hospital, to be erected near Reigate. Their letter of invitation informed me that the building would be in accordance with instructions furnished, which stated among other things that the Board contemplated an expenditure of about 30,000*l*.

After informing the Board that the prizes (73*l*. 10*s*. and 31*l*. 10*s*.), were no inducement whatever to me to compete, and eliciting from them in reply a distinct assurance that it was their intention to employ the successful competitor in the erection of the building, I consented on this condition alone, and little suspecting the real state of the case, to send in designs, which, with those of the other competitors, were reported upon by Mr. Bellamy; and on the 19th December, 1861, I was informed that the first prize had been awarded to me, and that the drawings were on view to subscribers and others.

Since that time, though the Board have retained my designs, and even applied to me for a perspective view of the building, I have received no communication from them except in reply to letters addressed to them; and it now appears that they have never possessed the 30,000*l*. named in their instructions as their contemplated expenditure, nor do they appear to have ever had any definite prospect of being able to build their new hospital.

Having recently seen by advertisements that the Board have purchased an old building, and have accepted plans for its alteration, without any communication with me, I inquired whether they had abandoned the idea of erecting a new hospital from my designs, but have not been able to get any satisfactory reply to this reasonable question.

Architects are unfortunately not unaccustomed to want of courtesy and fair dealing in open competitions, but I think the competitors in this case had a right to expect that the Board of a respectable and useful charity, with such a man as Mr. Henry Huth as its treasurer, would not have sought to obtain from professional men, by a promise of something which it was out of their power to give, designs for a building for the erection of which they were fully aware no funds were available.

EDWARD M. BARRY.

*** Is not this a case which might usefully be confided to a lawyer, with the view of teaching committees that they have duties as well as rights?—ED.

CANONS, NEAR EDGWARE.

JOHN FREEMAN, Esq., of Fawley Court, in A.D. 1748, purchased the pews, pulpit, altar, and font of the chapel of Canons, and with them fitted up his parish church of Fawley. At the same time he modernised the windows and doorways of the church. The seats are arranged choir-wise, facing north and south. The carving is by Grinling Gibbons.

Fawley is in the county of Buckingham, and about three miles from Henley-on-Thames. The pulpit and stalls are still to be seen, unless the church has been restored within the last twelve months.

E. J. PAYNE.

A SUGGESTION AS TO THE SO-CALLED "ACOUSTIC POTTERY."

MY attention has been directed to some correspondence, accompanied by an illustration, in your columns bearing the mysterious and rather incomprehensible title of "Acoustic Pottery." Though a careful description is given of the whole arrangement, there is not the slightest suggestion as to *how* these jars are supposed to have aided in the acoustic effect, nor any reference to known laws on the transmission of sound. Of course every one knows that earthenware pots share in common with all hollow vessels the power of developing sound to a wonderful degree, but I have never noticed in any crockery-shops that the empty pickle-jars conduced in any way to produce unusual acoustic effects; and it is difficult to understand how, if those exposed on the shelves failed in this respect, that the jars under the counter or down in the cellar were likely to have assisted much.

Now this seems to be the case as regards the position of the jars discovered in the churches at Norwich: they seem to be built into walls at the side of a narrow channel, like an open drain, under the seats of the choir, and were of course covered over by the floor of the stalls. Is it to be supposed that the voices of the choir went by some mysterious means straight down through an oak floor, entered the jars, were developed there somehow, and then issued out in a grand solemn body of sound and filled the whole church with its volume? This may have been so, and as I do not know much about acoustics I should only be too glad if any one learned in the science could explain it. In the mean time I would venture to offer a suggestion, viz., that the arrangement is neither more nor less than a fifteenth century *heating apparatus*. Both the arrangement and the position seem to favour this idea. If a little charcoal were placed in each, or even in alternate pots, the draft in the flue would have the effect of keeping it burning for a long time, and the warmth generated thereby, and ascending through perforations in the floor, would of course be very grateful to the occupants of the stalls during the services of the church. The fires, when once kindled, would keep in at the least for twelve or fourteen hours without any touching, and could at any time be easily replenished. Of course a flue from the chambers would greatly accelerate the draft; and some such flue may possibly have existed, the remains of which may have been destroyed during the subsequent alterations.

One of the churches in Peterborough is, I am told, still heated by an apparatus somewhat similar, invented and patented many years ago by some ingenious person, whose name I cannot at this moment find out.

In this case there are six pits like little cesspools, about 1 foot 6 inches square, and 2 feet

deep from floor level. They are placed at nearly equal distances over the church, are built of fire-brick, and covered over level with the floor by a cast-iron plate. These chambers are connected by a fire-brick channel or flue, passing from one to the other, laid immediately under the paving, and consequently about 15 or 18 inches above the bottom of the fire-chamber. The last pit of the series communicates with a common vertical flue in the wall; a certain quantity of fuel being placed in each of the pits, the one next the flue is lighted, and allowed to burn up a little, so as thoroughly to warm the flue; the others are then lighted in rapid succession, and without any trouble, as the first fire acts as a pilot stove. The fires are then allowed to burn gradually down, lasting about twenty-four hours, the result being that the church is thoroughly warmed.

We have here almost identically similar apparatuses. In the one case, the pots are small and many; and in the other case, the pots are large and few.

Mr. Phipson says, that when the pots at Norwich were discovered, there were no remains of any kind in them. When the fires are burned out in Peterborough, there is hardly anything left in the pits, the strength of the draft having carried away the particles of consumed fuel.

It seems curious that such an arrangement, very peculiar in itself, and very unusual, should be found in two churches in the same city, and nowhere else; for we do not hear of any of your correspondents ever having seen anything like it except at Fountains. This certainly seems to open the way to the idea that it must have been the invention of an individual; and that possibly the plan having proved troublesome, and not very satisfactory in its results, it had soon ceased to be used, and of course, from its position, forgotten. Possibly it may have been the first of a long line of heating schemes to which the people of this country have, during the last few years, been constantly falling victims. To judge from the illustration, it must, at least, have had one merit, not generally possessed by most of our modern contrivances, viz., it must decidedly have been cheap, even if not very effective.

R. NORMAN SHAW.

IMPROVEMENTS IN "CLOSETS."

MESSRS. READE & HEWITT, of Liverpool, have patented an invention for regulating the supply of water to water-closets, which they call the Pneumatic Vessel. The object of it is to prevent a waste of water, and to obtain a perfectly regulated supply, whether the head of water be 8 feet or 200 feet, and whether the cistern be immediately overhead or at a distance from the closet: thus, with pan closets, meeting all the exigencies of site which can occur in any building. The regulating valves now frequently used the inventors consider to be very imperfect pieces of mechanism, and not even equal to the old-fashioned cistern-valve with cranks and wires. The pneumatic vessel, when applied to pan closets, is placed in a recess in the wall behind the wood casing, and about 6 inches above the seat. A disc service-valve is contained in the bottom of the vessel, with a spindle working through a stuffing-box and guide eye, and secured by a joint to a connecting-rod, the other end of which is attached to a weighted lever. The whole apparatus is fixed to a board in the manner of an ordinary force-pump. By moving the connecting-rod of valve nearer to or further from the fulcrum of the lever, the waterway can be enlarged or diminished to suit the pressure; so that if the rod is attached to the lever by the hole nearest the fulcrum, the weight on the lever will keep the valve balanced against the highest pressure from the main; and, on the contrary, if the rod is moved to the hole furthest from the fulcrum, the waterway is enlarged and allows a free flow at low pressure, which is much assisted by the valve opening into the bottom of the vessel instead of in a bend of the pipe, as is usually the case. Out of the side of the vessel, near the bottom, a ¾-inch syphon service-pipe is carried above the top of the vessel, the longer leg entering the basin in the ordinary way.

At the top of the vessel is a floating air-valve, formed of a hollow indiarubber ball, 2 inches diameter, resting on cross-wires, which, when the vessel is full, is floated up against a brass bell or seat, from which a ½-inch air-pipe is carried to a hole under the flush rim of basin. The action may be explained as follows:—On the handle of the closet being lifted, the water flows through the service-valve into the vessel, rising level in the syphon-pipe, the air contained in the vessel escaping by air-valve and pipe. When the water reaches the floating ball, it rises and closes the bell orifice of the air-pipe, and then rising in the syphon, delivers into the basin the water flowing, and the vessel keeping full as long as the handle is held up. On the handle being dropped, the air re-enters the vessel by the air-valve, and the contents are syphoned out into the pan, forming the after supply. It will be seen from this that no water can flow into the basin until the vessel is full, and that it syphons itself empty when the service-valve is shut. In conjunction with this apparatus a high-pressure cistern, which is a part of the patent, may be used, and in some situations would prove of great utility, as it, as well as preventing a waste of water, containing only sufficient to once flush the closet, accumulates and utilises the pressure from the main, which is dissipated by an open cistern, and discharges its contents with great force into the basin, on the service-valve being opened. When the water-supply is constant from the main, this cistern is likely to be patronized by the water companies, no regulating cistern having before been contrived for pan-closets, the after-supply forming a difficulty not readily surmounted. The cistern acts by compressed air, but it is well known that the air contained in a close vessel at high pressure, becomes rapidly absorbed by the water. This is one of the defects of fire-engines, the air-vessel becoming water-logged; and in hydraulic rams a provision has to be made by a capillary tube, called a sniffling-valve for the renewal of the air on the return stroke. The high-pressure cistern possesses an inlet air-valve, by which the air is renewed each time the closet is used, thus sustaining its elastic force, and preventing its destruction by frost. The pressure due to the head of water is retained in this cistern, even though it should be supplied through 200 or 300 yards of ½-inch pipe. The orifice of the supply-pipe is not more than ¼-inch bore, and one cistern would work a dozen closets, thus effecting a great saving in piping, both for the supply and service. The apparatus is on view in Liverpool.

BRICK CROSSINGS.

WILL any of your correspondents inform me, through the *Builder*, in what town street-crossings are laid in with bricks, of what kind of bricks, their durability in metalled streets where the traffic is constant and heavy; also average cost per superficial foot or yard?

A SURVEYOR.

THE LEVERAGE OF TOOLS.

SIR,—Probably some of your readers may at some time or other have had occasion to use a screwdriver, a carpenter's tool which everybody knows; and probably they have found by experience that a long driver has far more power than a short one: the longer it is (providing its dimensions do not exceed such limits as to make it otherwise than a "handy tool"), the greater is the power with the same force at the extremity in proximity to the hand.

The same practical result is arrived at with a "borer." For instance, suppose a man had to bore a hole through a piece of timber, or to increase the diameter of a perforation in a piece of iron, he would do it with greater facility with a borer 2 feet long than with one only half the length.

Can this proportionate power be reduced to figures?

F. B. B.

COST OF "QUANTITIES,"

CHELSEA WORKHOUSE ADDITIONS.

SIR,—Will you inform me whether it is usual for a surveyor to charge 3*l.* 3*s.* for a copy of quantities, besides 1½ per cent. on the amount of contract? The architect of Chelsea Workhouse additions has done this, and will not return the 3*l.* 3*s.* to the competitors, eleven in number, whose payments make a sum of 34*l.* 13*s.*

ONE OF THEM.

COMPENSATION CLAIMS.

A CASE of some importance occupied Mr. Under-Sheriff Burchell and a special jury nearly the whole of Thursday, the 21st, at the Sheriffs' Court, Red Lion-square, on a claim made by Mrs. Desormeaux, of the Northumberland Hotel, Northumberland-street, against the Charing-cross Railway Company, for obstructing her business through the "block-up" by their works. Mr. Hardinge Giffard and Mr. Maclaughlin were for the claimant; and Mr. Lloyd, Q.C. (Mr. Shield with him), for the company. The house being situate at the corner of Northumberland-passage, was some way from the railway works, but they had caused the obstruction. It was admitted that for pulling down Hungerford Market no compensation could be claimed, but only for the obstruction to the business by the railway works. It was alleged that the traffic was likely to return through the passage. The business had fallen off, and a tunnel had lately been opened near the spot. Mr. Giffard said it was a nice question whether a market could be abolished without an Act of Parliament. Mr. Lloyd said if a large sum were awarded the case might give rise to a number of claims, and it might be taken to the Court above whether the present claim came within the Act of Parliament. The Under-Sheriff placed the case before the jury, and at five o'clock they awarded 300*l.* damages.

CASES UNDER THE METROPOLITAN BUILDING ACT.

PUBLIC BUILDINGS AND POLICE MAGISTRATES.

AN important decision under the Building Act was made in the Court of Queen's Bench, last Wednesday, 20th inst. (the Queen *v.* Carruthers), as regards the bearing of the 30th section on public buildings, the subject being a church now building at Hackney. It appears, that Mr. Legg, the district surveyor of West Hackney, has held the opinion that this 30th section, instead of exempting public buildings from the prescribed rules of construction, imposes all these rules, and, in addition thereto, whatever else the district surveyor may consider necessary, subject to reference to the Board of Works.

The architect of the church, Mr. Edward Hakewill, himself a district surveyor of long standing, on the other hand, has always held and acted on the assumption that this 30th section freed public buildings from all the rules of construction, throwing the responsibility on the district surveyor, subject to the reference to the Board, in case of disagreement between him and the builder.

Acting on this, which is certainly the grammatical reading of the section in question, the builder of the church, Mr. Carruthers, having previously deposited with Mr. Legg the drawings of the church, proceeded in June last to dig trenches, fill in the concrete, and commence the walls, during which time Mr. Legg simply drew attention to the fact, that the footings of the walls were not twice the thickness of the walls; and Mr. Hakewill, in reply, contented himself by showing that they were constructively sufficient, and reminding the district surveyor, that in case he was not of that opinion, reference should be made to the Metropolitan Board of Works.

Thus matters went on till the walls were about 7 feet high, when the district surveyor took the matter, not to the Metropolitan Board, but to the police-court; and the magistrate, not seeing his own want of jurisdiction, gave an order in accordance with the district surveyor's requirement, that the footings should be made twice the thickness of the walls, with costs.

This was at once appealed against on the part of Mr. Hakewill; and as the courts were not then sitting, the judge of vacation issued a writ of *certiorari*, to remove the case to the Queen's Bench, allowing the works to proceed in the interim.

A rule *nisi* was granted on the 12th November last, which was argued against at great length by Mr. Lush, Q.C., on the 20th inst.; but the judges unanimously decided that the order of the magistrate was erroneous and must be quashed, and gave judgment accordingly. Mr. Addison appeared for Mr. Hakewill.

In the course of the argument,—

Mr. Justice Blackburn observed that it might well be that the Legislature had refrained from placing public buildings under the jurisdiction of police magistrates. Such a jurisdiction, for instance, might press very hardly upon an architect of eminence who departed somewhat from the ordinary rules of the profession—as, for example, in the case of Sir Christopher Wren in the construction of St. Paul's.

The Lord Chief Justice said the clause which referred to public buildings gave an appeal to the board, but no power to magistrates to enforce the order; and public buildings, as regarded rules of construction, were excluded from the operation of other clauses giving the magistrates that power. Now, certainly the manner of making a wall was a matter of "construction;" and so, without straining and almost perverting the terms of the Act, the matter in question could not be brought within the jurisdiction of the magistrates. It was only as regarded matters not of construction that public buildings were under such jurisdiction. It might be that there was an omission in the Act as to the means of enforcing the requirements of the board as to the construction of public buildings. But whether it was an omission or not, there was no such power in the Act, and therefore the order was without jurisdiction.

Books Received.

Letter on Corpulence. By WILLIAM BANTING. Harrison, Pall-mall. 1864. Third edition.

LETTERS to the public recommending some individual medical attendant are little better than professional puffs; but we must do Mr. Banting the justice to state that it was not till his Letter to the public had reached a third edition that he published the name of the medical man to whom he attributes his cure of corpulency. He had published or distributed his first two editions gratuitously; but, finding his correspondence on the subject becoming rather troublesome and expensive, he issues the third edition at cost price (6d.), and, to save trouble, names his physician. However, Mr. Banting is evidently in downright earnest as to his extraordinary cure; and he publishes the simple principles of regimen on which it was effected. Our readers may recollect an article in our columns on "Popularizing Physiology," based on a popular little treatise by Dr. Lawson, Professor of Physiology at Birmingham College. In that article, as in the book noticed in it, the subject of fat, and its connexion

with the liver and with saccharine and starchy food material, was treated of. Now, Mr. Banting's case is one of notable scientific importance as bearing upon this subject. It is by avoiding food of the kind just indicated that he has diminished his corpulency; reducing his weight from 202 lb. to 156 lb., or by the very material quantity of 46 lb.; diminishing his waist girth by 12½ inches; enabling him to go down stairs like other people, and not backwards, as he used to do; and also to tie his shoe-strings, &c., which for many years before he could not do; and so on. The food which he especially avoids is butter, sugar, potatoes, milk, and beer. He now takes chiefly fish, except salmon; butcher's meat of any sort, except pork; any vegetable except potato; any kind of poultry or game; fruit; tea and toast, &c.; so that he is by no means an anchorite, and he does not even stint himself in quantity: it is the quality of food which makes all the difference.

Mr. Banting's is a very instructive case, and his pamphlet may do much good in such cases, as well as in the reverse process, where a little *more fat* is desirable. The idiosyncratic action of the liver, however, has doubtless much to do with differences of attainable result in different cases of both kinds.

Might not that terrible modern scourge, "fatty degeneration of the heart," which cuts off prematurely so many valuable members of society, be greatly mitigated, if not often cured, by Mr. Banting's simple plan. He himself, and others who have imitated his example, have been cured of palpitation, which is a concomitant of this dread disease.

A Clue to Railway Compensation, the Value of Estates, and Parochial Assessment. By THOS. MORRIS. London: Simpkin, Marshall, & Co. 1863.

STUDENTS and others desiring to get a first notion of the mode of making and maintaining claims for compensation for damage done by railways, or for property taken away, may obtain it from Mr. Morris's little book. They must not, however, stop here. A little knowledge in this particular case *is* a very dangerous thing; and they must apply themselves to more complete and elaborate treatises on the subject, before they attempt to meddle either with the interests of others or their own.

Miscellanea.

THE NAIL TRADE.—The horse-nail makers in the Dudley and East Worcestershire district have given notice that, unless they receive an advance of 3d. per 1,000, they will give notice for an advance of 6d. Other classes of nailers have also notified their intention of claiming an advance.

THE ACME OF UGLINESS.—Sir: If any one is desirous of seeing the most frightful thing that has yet been perpetrated in the way of drinking-fountains, he will find at the corner of the Edgware and Marylebone roads such a concentration of ugliness as will equal his most sanguine expectations. I am aware it has been erected some little time; but it is surely never too late to protest in the name of public taste, which is damaged greatly by all such erections.—H. P. S.

PROGRESS OF DUMBARTON.—According to the *Dumbarton Herald*, the increase in the population of this town during the past twelve years has been at the rate of 100 per cent. It now contains 721 more dwelling-houses and places of business than in 1851. The rental is greater by 10,388*l*. About 220 vessels have been built at the yards in the town, the estimated cost of which was 3,275,445*l*. The annual quantity of gas consumed in 1851 was 1,635,300 cubic feet; it is now 6,714,000, being a yearly increase of 5,078,700 feet. Within the same period the inhabitants have been supplied with an efficient police establishment; water has been introduced; the lighting of the town has been improved; the river has been deepened; the public common has been embanked at a cost of several thousand pounds; four new churches have been erected; the slaughter-house has been removed outside the town; a public cemetery has been opened; a new academy and public hall are about to be erected; a thorough system of town drainage is shortly to be gone into; and the balance to the credit of the corporation is upwards of 3,000*l*. greater than it was twelve years ago!

METROPOLITAN BOARD OF WORKS: THE CHAIRMAN'S SALARY.—On the motion of Mr. Tite, the salary of Mr. Thwaites, by a majority of 27 to 4, has been raised from 1,500*l*. to 2,000*l*.

THE SHAKSPEARE COMMITTEE.—It will be seen that the Site and Monument Committee are to meet next Friday (the 5th of February), and that artists and others desiring to make suggestions bearing on the desired result, are invited to forward them to 120, Pall Mall. The meeting is to be held at the house of the Right Hon. W. Cowper, M.P. A public meeting will probably be held as soon as the above committee have reported so as to inaugurate a general subscription.

WOBURN, BEDS.—Some excitement has existed in this town for a few weeks, owing to the threatened demolition, and re-building, of the parish church, which is described as a very "pretty" building, erected by the last Abbot of Woburn, and now in excellent repair, having a very fine, though inconsistent, chancel ceiling, the work of Sir William Chambers, and to have been handsomely ornamented by Mr. Blore, at considerable expense, for the present Duke of Bedford's grandfather. It seems, however, by the *Bedford Times*, that the inhabitants, with a very few exceptions, strongly regret the change, being much attached to the old church, and finding it ample for the existing population; and it is thought that the Duke, absent from indisposition, but known not to have originated the scheme, may direct its reversal.

THE NEW BOOKS OF 1863.—According to the *Publishers' Circular*, 3,878 is the number of titles of publications issued in the past year. This falls in a trifling degree short of the number in 1862, which amounted, after similar deductions, to exactly 3,913. These figures, however, though interesting in some respects, afford really little indication of the relative prosperity of the trade in different years. Of course, if the number of titles of new works fell greatly in any particular year, it could not but indicate some real depression. But the true index of prosperity does not lie in the number of titles, which remain pretty nearly stationary from year to year, but in that far less easily ascertainable indication, the number of issues.

THE BARTLOW TUMULI.—Mr. Parnell, the secretary of the Archæological Institute, lately submitted to the members a profile of the Bartlow tumuli, prepared for them by the engineer of the Great Eastern railway, in order to show the manner in which he proposes to bring a new line between these interesting relics. At the same meeting a communication from the Society of Antiquaries was received. That body promised, by resolution, to offer strenuous opposition to the passage through Parliament of any Bill that shall give power to the Great Eastern Railway Company to injure the Bartlow gravemounds. Several members of the Institute having condemned the wanton and daily increasing disregard of public opinion shown by railway companies, it was unanimously resolved,—"That the proposed method of carrying a line of railway through the Bartlow hills is objectionable, and that no scheme would obtain the sanction of the Institute the adoption of which would in any degree injure or deface these singular monuments of antiquity."

THE GUERNSEY STONE TRADE AND THE THAMES EMBANKMENT.—A large contract has been taken for the supply of Guernsey Syenite for the Thames embankment. Professor Tennant, of King's College, has certified that the rock is composed of quartz, felspar, hornblende, and mica, very hard and compact, and one of the best stones that could be selected for the purpose, being less likely to perish than granite. A hundred thousand tons, much of it dressed, have been ordered. The specimen sent to London was taken from the Ville Baudu Quarry, belonging to Mr. James Monfries. The first stone for the undertaking has been worked.——A quantity of stone, amounting to 40,000 tons, has been prepared by the workmen employed by the contractors for the Alderney breakwater. This large quantity was intended for the eastern arm, which has not yet been commenced; but preliminary inquiries have been made with a view to having it transferred to Chatham Dockyard.——There is a strike among the stone-crackers at St. Sampson for an increase of 2d. per ton. Some of the men who are natives of the island wished to continue at the rates given at present, but were intimidated by the Irish portion of the labourers who were on strike.

THE INTERNATONAL EXHIBITION BUILDING.—The upper part of the eastern dome has been taken down, and the work of removal is going on.

ARCHITECTURAL INSTITUTE OF SCOTLAND.—At the meeting of the Architectural Institute of Scotland, to be held on the evening of Monday, the 1st of February, the business will be a letter from the hon. sec of the Architectural Alliance in reference to competitions; and a paper on—"A National Memorial—what it should be?"

THE LATE MR. PATRICK BYRNE, ARCHITECT.—Mr. Byrne, who died on the 10th inst., at the age of eighty-one, has erected a considerable number of churches in Dublin and its neighbourhood, besides buildings of a secular character. He was one of the vice-presidents of the new Institute of Architects of Ireland, and a member of the Hibernian Academy.

MONUMENTAL.—The *Englishman*, of India, states, that Mr. Burne has gone to Dhurrumsala, to complete the monument there being erected over the last resting-place of the late Lord Elgin. The design for this monument was chosen by Lord Elgin himself, during his dying hours, from designs drawn, at his own request, by Mr. Gordon, of Umritsur, civil engineer.——It is proposed to erect a statue to Bernard Palissy, the famous worker in pottery, at Saintes (Charente Inférieure), his birthplace.

EXTIRPATION OF INSECTS.—A correspondent asks for the best remedy for the destruction of insects of a very small size, which infest his kitchen, in the vicinity of Bryanston-square. Perhaps some of our readers may now be able to tell us of their experience with those insect powders of the pyrethrum class, a trial of which we suggested. Keating's insect powder is, we believe, of this class, and has been found effectual in killing some sorts of insects.

CASSELLI'S "PANTELEGRAM."—Some interesting and successful experiments have recently been made between the Liverpool and London stations of the Electric Telegraph Company with the telegraphic apparatus invented by M. Casselli, and termed the "Pantelegram." M. Casselli's principle is the transmitting to distant stations of *fac simile* copies of messages and signatures as written by the sender, and also exact counterparts of designs and portraits.

THE CHATHAM SURVEYORSHIP.—Mr. Weeden, the surveyor to the Local Board of Health, has recently died. The deceased gentleman held this office for a great number of years. The salary of Mr. Weeden, as surveyor and inspector of nuisances, was only 120*l*. The local board have ordered candidates for the office to be advertised for in the *Chatham News*, the election to take place this Friday, after rejecting attempts to reduce the salary to 100*l*., with a foreman at 28*l*., and even to 80*l*., and an assistant at 60*l*.

THE GREAT NORTHERN HOSPITAL.—The Metropolitan Railway Company having carried their line immediately under this hospital, the committee have found another site and building in the Caledonian-road, midway betwixt King's-cross and the Cattle-market, and in the immediate vicinity of large manufactories and building yards, as well as the dwellings of the poor. A correspondent wishes us to urge the claims of this very useful institution on the public patronage, and this we most willingly do. The district contains a population of at least 500,000, heretofore without any hospital accommodation; and it is to be earnestly hoped that ere long it will be furnished with an hospital adequate to its wants. Subscriptions are received by the secretary at the present hospital, 235, Caledonian-road.

GLASGOW ARCHITECTURAL SOCIETY.—The usual monthly meeting was held in the rooms of the society on the 18th instant, Mr. J. Honeyman, jun., vice-president, in the chair. The chairman intimated that the fitting up of the rooms was now completed; the books had been arranged and catalogued, and arrangements had been made for lending them out to members. Mr. Campbell Douglas then read a paper entitled "Some Remarks on Fergusson's 'History of the Modern Styles of Architecture.'" After reviewing Mr. Fergusson's opinion that Italian is the *vernacular* of this country, Mr. Douglas showed that the old styles were all the products of ages of faith; that now-a-days men will not be confined to one style any more than to one faith; that when we all believe in common we shall have a new style; and when we have one faith we may hope for one style of architecture. He denied that a revived Italian was our vernacular.

BRIGHTON WEST PIER.—We perceive, by the first report of the Brighton West Pier Company, that "the contract for the erection of the pier has been let to Messrs. Laidlaw & Sons, of Glasgow, for the sum of 21,890*l*."

THE FAIRBAIRN ENGINEERING COMPANY.—The large machinery and iron business of Messrs. Fairbairn & Co., of Manchester, is about to be merged into a joint-stock establishment, to be called the Fairbairn Engineering Company, with a capital of 250,000*l*., in shares of 10*l*., of which the chairman, Mr. Thomas Fairbairn, the sole representative of the old firm, subscribes for 70,000*l*.

THE ENGINEER TO THE LIVERPOOL DOCKS AND HARBOUR BOARD.—It has been agreed, in consideration of the services of Mr. Lyster, the engineer, to increase his salary to 2,500*l*. per annum, to commence from the 7th of November last, the end of the second year of his service. The Works Committee testified as to the zeal, diligence, and talent which Mr. Lyster had displayed in his department, and recommended the increase of salary thus given by the Board.

THE METROPOLITAN MAIN DRAINAGE PUMPING ENGINES.—The pumping engines for the Main Drainage works at Crossness, are now being constructed by Messrs. Boulton & Watt, at the Soho Works. These pumps will consist of an arrangement of four steam cylinders and eight pumps, fixed in an engine-house of large size. The four cylinders, each 48 feet in diameter by 9 feet stroke, will stand at the corners of a square. The pumps, eight in number, will each be 12 feet in diameter, and consist of a suction, middle, and delivery piece. Each steam cylinder will work eight plungers, the four nearest to the centre having a stroke of 2 feet 3 inches, and the other four a stroke of 4 feet 6 inches. They are all 57 inches in diameter. The suction valves will be vertical, the lower or suction pieces being cast like a circular open grate, 12 feet in diameter, the openings, some thirty in number, affording ample waterway. The delivery-valves will be the same in principle. The exact height of the lift will be about 18 feet. The boilers will be twelve in number, each 30 feet long by 6 feet in diameter.

SANITARY STATE OF NOTTINGHAM.—The report of the Sanitary Committee of the town of Nottingham for the year ending in September last has been printed. From this report it appears that the mortality at Nottingham, as elsewhere, has been high during the past year, but the increase has not brought the rate of mortality beyond 23 deaths to 1,000 living persons. The rate of infant mortality is still very unsatisfactory, seven-sixteenths of the whole number of deaths being of children under five years of age. The excess of 134 deaths this year over the last arises chiefly from the increase of 42 deaths under 5 years and 60 above 70 years of age upon the previous year. The report concludes with the remark that sanitary reform outside dwellings is progressing, but that such a reform interiorly, as regards ventilation and house-drainage, cleanliness, and general attention to the laws of health, is pressingly needful. The main outfall sewer for the drainage of the town, we may here add, is on the eve of completion, according to the local *Guardian*.

THALLIUM KNOWN TO THE ANCIENT MEXICANS.—It is reported upon good authority, says the *Mining Journal*, that a distinguished German chemist has just made an important discovery in connexion with the alloy now generally designated thallium. It appears that among the most ancient records of the ancient Mexicans an account is given of the mode of preparing the alloy used for producing the brilliant green fire which was freely burnt during the sacrificial ceremonies in honour of Vitzipultzi, one of their principal deities; and that in the attempt to prepare a similar alloy, from the details given, a discovery opening up an entirely new field of chemical science has been made. By the peculiar treatment of certain proportions of silver, lead, and selenium, a black powder was produced, so much resembling that designated thallium that the experimenter was induced to test it. The weight of alloy was precisely equal to that of the metals used; yet the whole of the reactions of thallium were obtained, and salts, bases, and acids of the alloy were produced, precisely as if the alloy had been a perfect metal. Even in the spectroscope the well-known green line was produced. It is anticipated that some tons of thallium will shortly be ready for sale in England at less than the price of silver.

DESTRUCTION OF A CHURCH BY FIRE.—St. Ann's Church, in the village of Parr, near St. Helen's, has been destroyed by fire. The damage is roughly estimated at about 1,000*l*., and the building was not insured. The fire originated through the overheating of the flues, as usual, in airing and preparing the church for divine service.

ATMOSPHERIC PRESSURE AS A REMEDIAL AGENT. At a scientific meeting in Paris, a singular paper was lately read by Dr. Foley, in which the writer recommends a high atmospheric pressure as a cure for various diseases. This can be done by constructing a small chamber communicating with a forcing-pump, and provided with an air-gauge and safety-valve. By this treatment catarrh, asthma, and complaints of the respiratory organs, it is said, may be removed; and in disorders arising from weakness, compressed air will arterialise the blood, and increase the vital power of the patient.

THE NIAGARA OUTRIVALLED.—A detachment of troops recently scouting in the valley of the Snake or Lewis fork of the Columbia, discovered a waterfall which, it is said, is entitled to the distinction of being called the greatest in the world. The entire volume of Snake river pours over a sheer precipice 198 feet high, 38 feet higher than Niagara. Snake river is fully as large as the Niagara, and the cascade is one solid sheet or body. The locality of this immense waterfall is near the point heretofore designated as the Great Shoshone or salmon falls of that river, but they have always been enveloped in mystery.

THE BIRMINGHAM SOCIETY OF ARTISTS.—The annual exhibition of this society has been a good one. The sales for the season of 1862-3 were;—General sales, 1,516*l*. 16s.: this amount includes 500*l*. of purchases made by the Art-Union of Great Britain; while the purchases of the Birmingham Art-Union amounted to 1,009*l*. 16s.; or total sales, 2,525*l*. 12s. In the last season, 1863-4, the general sales amounted to 1,450*l*. 11s., and the Birmingham Art-Union purchases to 950*l*. 7s.; making a total of 2,400*l*. 18s. Deducting 500*l*. spent by the National Art-Union in 1862, the sales of the present season compare advantageously with those of the season preceding. The number of persons who during the four weeks of cheap admission visited the exhibition was 11,760; while an additional 6,500 availed themselves of the free admissions given to all purchasers of Art-Union tickets. Thus, in one month, 18,260 persons—mostly of the working class—visited the exhibition.

LONDON, BRIGHTON, AND SOUTH COAST RAILWAY.—The half-yearly report of the directors has been published. The amount of capital raised on the 31st of December, 1863, was 11,708,974*l*. The amount of capital expended during the half-year was 625,580*l*. The gross revenue has been 537,160*l*., showing a diminution of 43,401*l*., when compared with the corresponding half-year. The directors, in announcing so large a reduction, state that it was hardly unexpected, inasmuch as the comparison is with the exceptional period of the International Exhibition of 1862. Besides this, it is to be attributed, to a considerable extent, to the great reduction of fares, which took place on the 1st of August last; whilst, considering the short period during which it has been in force, that reduction could not be compensated for by the augmentation which experience proves to have always followed diminution of charges, and of which the realisation must not be expected until time has been given to produce this unfailing result. The directors, however, remain of opinion that the policy which they adopted will ultimately be productive of benefit to the company. The balance available for dividend is also much diminished by a further heavy debt (21,632*l*.) for compensations in respect of accidents not occurring during the past half-year. The works on the South London line are making rapid progress; and by the end of the year 1864 it is hoped that these, as well as the widening of the Greenwich viaduct, and the necessary enlargement of the London Bridge Station, will be ready for traffic. Bills have been introduced seeking for powers to enable the company to complete the northern link of the Streatham, Mitcham, and Sutton line of last year; to carry out the arrangements concluded with the London, Chatham, and Dover Railway Company, as regards the access to Victoria Station; to extend the New Croydon line into the town of Croydon; and for other minor matters.

DECORATION OF ST. PAUL'S.—The work of carrying out the adornment of the interior of St. Paul's Cathedral lags for want of funds. It is estimated that 40,000*l*. at least are required for the completion of the work. This sum, it is proposed, should be raised mainly by a guinea subscription, to which the whole nation shall be asked to contribute. A resolution to this effect was carried at a meeting at the Mansion House, yesterday, and a committee was appointed to carry it out.

TENDERS.

For forming fair ground at Reading, Berks. Mr. W. H. Woodman, borough surveyor:—

Orton	£2,897 0 0
Adams & Kirby	2,702 0 0
Hartland & Bloomfield	2,388 0 0
Shaw	2,277 10 0
Rentmore	2,149 0 0
Hawkes (accepted)	1,987 12 0
Oliver (not opened: delivered after time).	

For restoration of Letcombe Regis Church. Mr. W. H. Woodman, architect:—

Kent (accepted)	£6,980 0 0

For completing the Paxton Arms, Wimbledon, for Mr. W. F. Hodgson, Kingston. Messrs. Wimble & Taylor, architects:—

Adamson & Son (accepted)	£1,955 0 0

For the first block of granaries, engine and boiler houses, and chimney-stalk, for the Patent Ventilating Granary Company, Rotherhithe. Mr. James Edmeston, architect. Quantities supplied by Mr. Parr:—

Lawrence & Sons	£16,273 0 0
Mansfield	16,200 0 0
Holland & Hannen	15,885 0 0
Myers & Sons	15,825 0 0
Simms & Marten	15,475 0 0
Browne & Robinson	15,296 0 0
Sheffield	15,260 0 0
G. J. Watts	14,722 0 0
Hack & Sons	14,600 0 0

For alterations and additions to premises, 55, Wood-street, City, for Mr. A. Shore. Messrs. Tillott & Chamberlain, architects. Quantities supplied:—

Brass	£3,499 0 0
Hill & Keddell	3,485 0 0
Ashby & Sons	3,459 0 0
Wills	3,442 0 0
Cannon	3,434 0 0
Patrick & Son	3,400 0 0
Hill & Sons	3,365 0 0
Piper & Wheeler	3,271 0 0
Fish (accepted)	3,260 0 0

NOTE.—The above amounts are exclusive of the old materials.

For the erection and completion of a house and offices at Leominster, for Mr. James Jones. Messrs. Elmslie, Franey, & Haddon, architects. Quantities by Mr. A. Coombes:—

Page (accepted)	£1,990 0 0

For new hospital for incurables, Putney Heath. Mr. Griffiths, architect. Quantities not supplied:—

		Extra if Stone Dressings to Fronts.
Mansfield	£9,780	£385
W. Lawrence & Sons	9,423	490
Browne & Robinson	9,248	599
Brass	8,886	—
Foster	8,390	—
Adamson	8,335	800
Bird	8,250	710

TO CORRESPONDENTS.

R. L.—J. B.—Z.—A Hawkboy.—F. T.—A. S. (shall hear).—H. N. H. H. J. M.—London Workman.—A. I. (usually)—T. G. (shall hear). M. P. (letters that reach us on Thursday morning have little chance of attention in that week's number).—Mr. Macpherson (MSS. were returned several weeks ago.)—A. M.—H. L.—Jimbo (look to any elementary treatise on hydraulics).—R. & L.—R. C.—R. C. (judgment is left as requested. It seems to us very erroneous).—L. C. R.—"The Chancel" (in type).—W. R.—J. H. W.

We are compelled to decline pointing out books and giving addresses.

All statements of facts, lists of tenders, &c., must be accompanied by the name and address of the sender; not necessarily for publication.

[ADVERTISEMENT.]

PERFECTION OF MECHANISM.—"As engineers we can say that it really approaches much nearer the perfection of mechanism than any other example of clockwork we have yet seen on anything like the same large scale."—*Engineer*, August 15, 1862. Clocks by the first artists of the day for the drawing-room, dining-room, bed-room, library, hall, staircase, bracket, carriage, church, turret, railways, warehouse, counting house, musical, and astronomical. Church and turret clocks specially estimated for. Benson's illustrated pamphlet on clocks (free by post for two stamps), with descriptions and prices, enables those who live in any part of the world to select a clock. Also a short pamphlet on cathedral and public clocks, free for one stamp. Prize Medal and honourable mention in classes 33 and 15.—J. W. BENSON, 33 and 34, Ludgate Hill, London. Established 1749. Watch and Clock Maker by Special Warrant of Appointment to H.R.H. the Prince of Wales.